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SCIENTIFIC INFORMATION REPORT

Biology and Medicine

(26)

Summary No. 4310

20 February 1963

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Prepared by

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SCIENTIFIC INFORMATION REPORTBiology and Medicine (26)

This is a serialized report consisting of unevaluated information prepared as abstracts, summaries, and translations from recent publications of the Sino-Soviet Bloc countries. It is issued in seven series. Of these, four, Biology and Medicine, Electronics and Engineering, Chemistry and Metallurgy, and Physics and Mathematics, are issued monthly. The fifth series, Chinese Science, is issued twice monthly; the sixth series, Organization and Administration of Soviet Science, is issued every 6 weeks; and the seventh series, Outer Mongolia, is issued sporadically. Individual items are unclassified unless otherwise indicated.

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I. FEATURE ITEM

1. Partial Table of Contents of Voyenno-Meditsinskiy Zhurnal No 10, 1962

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II. BIOLOGY

Basic Biology

2. Electron Microscopic Study of DNA Structure

"A Study of Deoxyribonucleic Acid by Means of Electron Microscopy," by A. M. Tongur, A. L. Zaydes, I. G. Stoyanova, and A. G. Pasynskiy, Vysokomolekul. Soyedineniya, 1962, Vol 4, No 1, pp 140-142 (from Referativnyy Zhurnal -- Khimiya, Biologicheskaya Khimiya. No 11, 10 Jun 62, Abstract No 11S174, author's abstract)

"Electron microscope investigations of DNA preparations obtained according to the method of Mirskiy Pollister show the predominance of fine thread-like particles in them. Under the electron microscope, the DNA particles when moist have the same configurations as when in solution. It was shown that the phenol method of extracting DNA causes essential structural changes in its particles."

3. Sites, Synthesis, and Significance of Nucleic Acids in a Cell

"The Organization of Nucleic Acids in a Cell," by I. B. Zbarskiy; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, No 12, Dec 62, pp 3-13

The author briefly reviews background research on nucleic acids in cells. The synthesis in model systems and in various cell components and the various types of DNA and RNA and their separate fractions are explained.

The author concludes that most probably the ribosomal and the soluble RNA are synthesized through the participation of the nucleolus, while the intermediary RNA is synthesized on the DNA matrix of the chromosomes.

Mechanisms such as the transfer of biological information from the nucleus to the cytoplasm and from the DNA molecule to the site of protein synthesis are clear to a certain extent, but mechanisms of reverse processes are still completely unknown. These mechanisms which most probably, according to the author, are linked with the penetration into the nucleus of comparatively small molecules are most significant in strictly regulating the biosynthesis of proteins and of all vital processes. The understanding of these mechanisms is especially significant in practice because through these pathways it will be possible to modify the vital activity and development of cells, organs, and organisms.

4. Specificity Factors in Nucleic Acids

"The Specificity Problem of Nucleic Acids," by A. N. Belozerskiy; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, No 12, Dec 62, pp 13-19

The high specificity of nucleic acids is arrived at, not only from new data on the chemical structure of these acids, but also from their unusually specific biological activity (introducing DNA from bacteria of the strain into another produced new traits which were inherited by subsequent generations); the high specificity of protein synthesis is determined, according to some researchers, not through the ribose molecule, but through information -- RNA. Work in recent years on phages and viruses has shown the very great significance of nucleic acids in infections and, consequently, in the reproduction of phages and viruses.

A very new complex of problems of species specificity of nucleic acids arises with the discovery of information-RNA and with the establishment of the probability that RNA is synthesized on the DNA matrix, which in its turn is the matrix for protein synthesis; i.e., its nucleotide sequence determines the distribution of amino acids in the protein chain being synthesized.

At the present time it has been possible to decipher the amino acid code and to establish the fact that the position of an amino acid is determined by a combination of three nucleotides. Then, knowing the sequence of an amino acid, it will be possible to construct the chain of a nucleic acid with a definite and corresponding nucleotide sequence.

The author presents various divergent views and points to many possible avenues of research on nucleic acids in phages, viruses, and infections with regard to their reproduction and control.

5. Evolution in DNA Composition Parallels Evolution in Plant Organization

"Nucleic Acids and Evolution in Algae Groups," by G. P. Serenkov (deceased), Moscow State University imeni M. V. Lomonosov, Biology-Soil Faculty; Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologiya, No 6, Nov/Dec 62, pp 857-868

Studies of the nucleotide composition of nucleic acids occurring in various species of algae of different families, orders, species, etc. showed that the DNA composition differed: in some, the DNA

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belonged to the GC-types (guanine-cytidine); in others, to the AT-type (adenine-thymidine); and in still others, the four nucleotides were almost equal.

Further studies showed that in green algae there was a definite pattern; in unicellular algae, the nucleotide composition of DNA approaches equimolecular ratios, i.e., $\frac{G+C}{A+T} = 1$, but as the structure of the algae becomes more complex (addition of flagellum, etc.), the guanyl and cytidyl nucleotides become dominant over their adenyl and thymedyl counterparts, and the ratio $\frac{G+C}{A+T}$ becomes greater than one, i.e., $\frac{G+C}{A+T} = > 1$. In *scenedesmus* this, ratio is 1.59 - 1.77.

In highly organized and multicellular algae, this picture is reversed, and in characeae, the $\left(\frac{G+C}{A+T}\right)$ is less than 1: $\left(\frac{G+C}{A+T}\right) = < 1$.

This type of ratio is characteristic of all higher plants without any exceptions.

Variations in RNA composition are much less than in DNA. The RNA is almost all algae studied belongs to the GC-type, which agrees with data on research on higher plants.

6. Possible Role of Antimetabolites in Chemotherapy of Virus Diseases

"The Effect of Antimetabolites of the Pyrimidine Bases on the Synthesis of Nucleic Acids," by S. S. Debov, Chair of Biological Chemistry of the First Moscow Order of Lenin Medical Institute imeni I. M. Sechenov; Moscow, Voprosy Meditsinskoy Khimii, Vol 8, No 6, Nov/Dec 62, pp 563-577

This article briefly reviews the significance of certain anti-metabolites which are structurally close to the natural pyrimidine bases and their derivatives and their effect on nucleic acid synthesis.

Analogues of pyrimidine bases discussed are: (1) analogues in which the methyl group at the 5-position of the pyrimidine ring is replaced by an atom of bromine, chlorine, or iodine, (5-bromo-uracil, etc.); (2) analogues in which the hydrogen in the 5-position of the pyrimidine ring is replaced by an atom of fluorine (5-fluoro-uracil); (3) analogues in which the oxygen atom in the 2-position of the pyrimidine ring is replaced by an atom of sulfur (2-thio-uracil, etc.); (4) analogues in which the carbon in the 4-position of the pyrimidine chain is replaced by a nitrogen atom (4-aza-uracil, etc.); and (5) analogues in which the carboxyl group has been replaced (uracil-methyl-sulphone, etc.).

The synthesis of these compounds with avrying degrees of details, their schematic diagrams, their role in blocking enzyme-substrate complexes and intermediate pathways of metabolism, and certain medicinal applications are discussed.

According to the author, certain results obtained in recent research indicate future prospects for further research on the synthesis of antimetabolites which can be used in the chemotherapy of viruses and bacterial infections.

7. Viral Nucleic Acid and Infectivity

"The Role of Nucleic Acids in Viral Infections," by A. S. Spirin; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, No 12, Dec 62, pp 35-38

The nucleic acid of a virus is the chief component which determines the ultimate course of events in the cell into which a virus has penetrated. The prominent role of a nucleic acid in the infectivity of viruses has been well established by numerous laboratories all over the world. It has been established also that some selected action (radiation, chemical action, etc.) on a nucleic acid leads to the inactivation of a virus, while a similar action on the protein of the virus is not as decisive. At present there is no doubt that a pure nucleic acid possesses infectivity.

If one considers the function of the viral protein forming the "membrane" of virus particles, then one cannot deny that the protein plays a decisive role in invasiveness. This is a significant matter because all, or almost all, existing methods of fighting viral infections are based on fighting the invasiveness of viruses and their spread from cell to cell, i.e., the action of antibodies, chemical agents, etc. on the protein components. We are still unable to affect selectively the nucleic acid of a virus, and this may be the reason there are no effective methods of fighting a whole series of viral infections. Viral nucleic acid is the active agent in viral infection, for it preserves the replication of a virus in the cells of the host. Two processes are involved in this replication: the production of a nucleic acid (viral nucleic acid) and the synthesis of a new protein (viral protein or protein). This process of formation of viral particles occurs, evidently, more or less spontaneously. Sometimes this replication process may be observed by placing some protein from tobacco mosaic virus in a test tube containing a solution of nucleic acid under appropriate conditions.

The synthesis of viral protein under the effect of nucleic acids is an imitation of the cellular mechanism in protein synthesis.

Viruses may be classified into two major types: DNA-containing and RNA-containing viruses. The majority of the RNA-containing viruses have a molecular weight of 2 million. An analogy might be noted between ribosome and RNA-containing viruses, and there is some analogy between the RNA in the ribosome and the RNA in the viruses.

During a study of ribosome of different origins (animal, plant, and bacterial), the RNA content in all cases was identical and equalled 1.7×10^6 . Knowing that there are two types of ribosomal RNA: a small and a large component of ribosomal RNA, then the sum of both components was always equal to 1.7 million. This means that each complete ribosomal particle includes one large and one small RNA molecule regardless of the type or organism. The fact that the RNA in very different viruses of the ribonucleotide nature are equal and consist of a molecular weight which approximately equals a million proves that this size of a molecule is necessary either for the reproduction of high molecular RNA in the cell or for its active function in protein synthesis inside the cell.

It may be supposed that complete viral RNA with a molecular weight of 2 million may be considered as a chain which contains "an information portion" (analogous to information RNA) for the synthesis of viral protein (molecular weight of information RNA is 300,000) plus what is analogous to both components of the ribosomal RNA (molecular weight 1.7 million).

The postulate that major processes of viral infections imitate normal cellular mechanisms is significant in directing research in the field of fighting viruses in viral nucleic acids.

Bionics

8. Bionics Study Whale Cries and Dolphin Skin

"Bionics and Cetaceans," by A. G. Tomilin, Doctor of Biological Sciences; Moscow, Priroda, Vol 51, No 10, 1962 pp 101-103

The article discusses the study of the sounds whales make and their sensitivity to sound. These animals answer immediately to a distress signal from another whale. A new method for catching whales is to attract them by reproducing this distress call artificially.

Also being studied is the skin structure of whales and dolphins to find methods of constructing boat and torpedo coverings which will allow greater speed through water. The article mentions the artificial skin "laminflo," which imitates the various layers of a dolphin's skin and which increases the speed of vessels by 50%. (laminflo was developed by the German scientist M. O. Kramer in 1960)

The author also points out the possibilities of imitating the fatty "pillow" on dolphins' heads which eliminates turbulence in water ahead of the animal.

Exobiology

9. Photographic Scanning of Mars May Prove Existence of Life There, Soviet Expert Says

"Life on Mars," by Kranid Lyubarskiy, Scientific Associate of the Physicotechnical Institute, Academy of Sciences Turkmen SSR; Tashkent, Pravda Vostoka, 2 Dec62, p 4

The author states in this article that a Soviet automatic station, now flying in the direction of Mars is expected to gather information preliminary to possible manned flight to that planet. This automatic station, "Mars-1," carries photographic equipment, and the pictures it may take could prove to be helpful either to confirm or to disprove many hypotheses. It is hoped that it will be possible to determine from photographs whether any form of life exists on Mars.

It has not been proved that all the necessary conditions for generating life ever existed on Mars. However, nothing can be found in the history of its development to contradict this. Since the surface temperature of Mars is below 0°C, any water present there must not be in a liquid form. Since the initial "structural material" for life is believed to have been present on Mars, it is possible to surmise that life does exist there although it may be in an environment less hospitable than that of earth: it may be a product of another world and of some other evolutionary process.

Marine Biology

10. Sea Organisms Valuable for Cancer Research and for Food Value

"Perpetual Storeroom of Wonderful Products -- Reporting From the Bottom of the Ocean," by V. Vrun'ko; Moscow, Ekonomicheskaya Gazeta, No 47, 17 Nov 62, p 37

This article describes some of the scientific research that is being conducted in the Far East on plants and animals of the sea.

There are several scientific expeditions at work on Putyatın Island [in the Petra Vilikogo Bay, off the coast at Dunay]. One expedition is from the Institute of Biophysics, Academy of Medical Sciences USSR. Headed by Candidate of Biological Sciences Aleksandr Ivanovich Zhuravlev, the expedition is doing research connected with the problem of cancer.

The basic object of the expedition's research is the sea urchin, the only object in nature from which it is possible to obtain cells dividing synchronously in large masses, that is, cells in a strictly determined phase of fission. Such a mass of cells offers the opportunity to conduct all sorts of chemical and physical research: to determine the substances spreading and participating in the process of fission.

"There is hope," Zhuravlev told the author, "that the study of the nature of the substances which stimulate the synchronous fission of the cells of the sea urchin and the study of the energy process that occur during fission will help to decipher one more secret of cancer."

However, Soviet scientists are interested in the speed of tissue cell fission for other reasons also. The question of the growth of fish has bothered ichthyologists, in particular, for a long time. They know that salmon, and among them the humpback salmon, grow the quickest of all. Why does it happen this way, what furthers this, how can the nature of the phenomenon be discovered?

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A. I. Zhuravlev, together with V. S. Korzhenko, determined that in the fats of the humpback salmon more intensive energy processes occur and there is a large supply of substances which block free radicals. It is known that carotinoids and ascorbic and citric acids are the most active such substances. Thus the speed of growth of organisms depends to a significant extent on the saturation of animals' tissues with these compounds.

Scientific workers from Leningrad State University are also on Putyatin Island. This expedition is headed by Prof Pavel Ivanovich Gulyayev, Doctor of Biological Sciences and Chief of the Laboratories of Physiological Cybernetics. The center of control and signalization in the human being is the nervous system with its excitation, impulses, and signals. The precise knowledge of the nature of these phenomena will determine ways of treating nervous diseases and offer the possibility of perfecting diagnoses. The straight nerve column of the Pacific Ocean squid is the most suitable object for this work.

The third type of research that is described concerns the potential food value of ocean plants and animals.

The author spent several days on the island of Sakhalin talking with workers from the Laboratory of the Technology of Processing Sea Products [institute unidentified], engineers, heads of the industries that manufacture these products, and party workers.

Kelp, in the author's words, is a truly magical plant. For 2 years of its existence, it attracts from the water and accumulates in itself such chemical elements as rubidium, cobalt, nickel, molybdenum, titanium, vanadium, and radium. It also contains a great deal of chlorine, potash, sodium, phosphorus, calcium, iron, and bromine, but the main thing is vitamins -- C, B₁, B₁₂, A, D, E, and others. Kelp contains 200 times more iodine than does sea crab meat. Almost all the iodine in kelp is fourfold organic connection with its proteins and carbohydrates, which is conducive to its complete and rapid assimilation by the human organism. As a result of the systematic use of kelp, the population of the countries of the Far East is practically free of atherosclerosis and goiter.

On Sakhalin, the industrial production of dozens of various objects and dishes from sea scallops, mussels, sea cucumbers, squid, and kelp was adjusted some time ago. All of these products are sold in the form of preserves and frozen briquettes. Preserves from scallop muscles, scallop milk, and roe in tomato sauce are produced semifinished for salads and Russian salads. The assortment of production from kelp is broadening significantly. There is Sakhalin salad, kelp roe, stuffed cabbage roll made with kelp, and kelp in tomato. Saltwort, baked pudding, "pirozhki," and "zrazy" [made from kelp?] are very tasty. Preserves are made from shrimp, and the technology of producing preserves from squid meat has been worked out.

Some of these products are sold in the stores of Yuzhno-Sakhalin, Vladivostok, Khabarovsk, and Moscow, but this is still a very small amount, the author says, in comparison to the possibilities that exist. For example, he continues, Sakhalin alone can give the country 2 million centners of nonfish sea products daily. This includes 800,000 centners of sea cucumbers, 80,000 centners of scallops, and 120,000 centners of air-dried kelp.

The author cites two reasons for the small output of the seafood industry. For one thing, capital investments to increase the size of the fleet that is adapted for catching sea products are insignificant. In addition, advertisements are needed to propagandize the great value of these products, breaking the devotion to traditional food. He concludes that it is now a problem for the workers of commerce.

11. Large-Scale Marking of Fish for Research Carried Out in Soviet Union

"Marked Fish," by K. G. Konstantinov, Candidate of Biological Sciences (Polar Scientific-Research Institute of Sea Fisheries and Oceanography, Murmansk); Moscow, Nauka i Zhizn', No 12, Dec 62, pp 50-54

Research is being conducted in the Soviet Union on many aspects of the migratory and spawning activity of fish. This is done largely through the study of fish that have been marked or tagged at piscicultural stations throughout the country.

One question that has always bothered professional fishermen is whether fish were compelled to return to the river where they had hatched to spawn. The mass marking of migratory fish has helped to answer this question. Piscicultural stations are working on many rivers of the Soviet polar region, marking and releasing young salmon. At first the simplest method was used--the fin of a young fish was clipped or cut. This specimen could be recognized at any age, as the fin never grew back.

It turned out that salmon always return to the very rivers in which they were hatched. A fine sense of smell helps the fish find the correct route (a salmon with sealed up "nostrils" cannot recognize the water of "his" or a "strange" river enerringly and loses his orientation).

Marking showed that each river has its own herd of salmon. This fact demands the especially careful guarding of the stocks. If the fish in one river are destroyed, it is impossible to count on the natural repopulation of the river at the expense of neighboring rivers. The adaptation of the salmon to a definite river basin increases the effectiveness of artificial breeding for the fish goes, without fail, for spawning to the same river into which he was released by the piscicultural station.

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However, the system of marking fish by cutting the fin had certain defects -- the fish was not able to move very quickly or adroitly and, hence, had difficulties in hunting food and avoiding his enemies. When the fish was caught, the clipped fin often was not noticed by the fishermen. In addition, a fish with a fin harmed under natural conditions could easily be mistaken for a marked one.

A more perfect means of marking fish was devised: a numbered metallic marker is attached to the fish's gill cover; the number on the marker corresponds to the number under which the fish is entered in a special journal. In this manner cod, haddock, flounder, and anarhichas are regularly marked in the Barents Sea. In the past 30 years, approximately 400,000 numbered fish have been released, mainly cod; of these, more than 5,000 were caught a second time.

Scientists have learned a great deal by studying the marked fish. For instance, the cod from the Barents Sea spawn 1,000 miles away at the northwest shores of Norway. After spawning, which takes place from February to April, the roe is carried in a north-northeasterly direction by the current -- a branch of the Gulf Stream, and the newly hatched fish are scattered throughout the Barents Sea.

They also discovered that the speed and direction of migration change often. For example, in cold years the area of diffusion of the fish, and hence the region of basic fishing, moved toward the southwest.

The marking of fish helps scientists to foresee and correctly evaluate mass shifts. Fishermen immediately inform PINRO Polyarnyy Nauchno-Issledovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii (Bøler Scientific-Research Institute of Sea Fisheries and Oceanography) of each numbered fish they catch. (There is a small reward for the delivery of the marker.) The information obtained about the direction the fish was going is recorded on a special card. This card makes it possible to judge shifts of the fish schools and helps in the correct placing of the fleet.

It was learned that a large cod covers 8-10 miles per day when traveling to and from the spawning ground. Through marking, the speed of the cod's growth was also determined. These facts enable the fishermen to know in advance where the best catch will be and what size fish they can expect to catch there.

However, the numbered mark proved to have disadvantages: it gradually destroyed the fish's gill cover and fell off within 1 1/2 - 2 years. Further, the fishermen did not always spot it.

The Norwegian scientist Einar Lea invented a marking system free of such defects which is now being used in many countries, including the Soviet Union. A tube-like marker is attached near the dorsal fin with a thin flexible wire or fibril. The specific gravity of the marker is close

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to that of water; it is hollow, light-weight, and brightly colored. A letter written in several languages is inserted into the tube, requesting the finder to send the marker and all information about the caught fish to one of the enclosed addresses. In the Barents Sea, the fish bear letters written in English, German, Norwegian, and Russian.

In recent years, trawling for sea perch has been developing rapidly in the North Atlantic, including the Barents Sea. Little is known about the life and habits of this valuable fish. All attempts to mark the perch have so far been unsuccessful because once a perch is taken from the water, it will not live.

The ocean herring plays a leading role in the world fish industry. Only quite recently have ways been discovered to mark it. Soviet scientists use a plastic disc which is skillfully attached by a thin wire to the herring's back. Norwegians and Icelanders have a different method. An instrument somewhat resembling a pistol is held next to the fish's body, instantly breaks the skin, and introduces into the abdominal cavity an iron numbered plate with rounded edges. A method has also been devised in these countries for identifying the marked herring once they are caught. In the flour milling factories, special electromagnets are placed over the conveyor belts, and when a marked fish approaches it is automatically dropped into a hatch. Of course, if the marked herring is caught by fishermen of other lands, there is no chance that the marker will be detected. It has even happened that Soviet citizens have found a marker in their pickled herring.

Soviet scientists have developed a simple and reliable way to mark fish using radioactive isotopes. If a fish is put into a reservoir containing water with a weak addition of radioactive calcium or phosphorous for a few hours, the isotopes penetrate into its body, mainly into the skeleton. The isotopes will remain in the fish for several months, during which time their presence can be detected by special instruments. This method has several advantages: a large number of fish can be marked simultaneously, the isotopes do not harm the fish in any way, and the marked fish can be easily and safely detected.

At present, a model of the radioactive bath is on exhibit at VDNKh (Exhibition of Achievements of the National Economy).

With the help of a marker that emits sound, the exact course of the fish's travels can be followed. A light-weight streamlined instrument the size of a large acorn is attached to the back of a salmon. The instrument sends out oscillations of an ultrasonic frequency, which are picked up by shore stations.

Other marine animals besides fish have an industrial significance. In some tropical regions, for example, the West Indies, sea turtles are very important. The marking of the turtle, in order to study its migratory habits, is accomplished by branding a number directly onto its shell.

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The whale industry occupies an important place in the world economy. For marking, a light-weight marked harpoon, which sticks near the surface of the whale's body, is shot into the whale.

The marking of other marine mammals, among them dolphins and seals, is widely practiced.

Even marine invertebrates such a squid, lobster, and prawns can be marked.

12. Electricity Used for Catching Fish

"Electric Fishing Rods," by Yu. Shemanskiy; Moscow, Znaniye-Sila, Vol 37, No 12, 1962, pp 19-20

The article mentions a method for catching fresh-water fish with a trawl that gives off an electric current. The current momentarily stuns the fish so that they can easily be hauled in. Such a trawl is presently being developed which will catch only large fish. The Soviet Union is now beginning commercial production of electrical fishing equipment.

Also mentioned in the article is the use of electric fishing rods to catch large salt-water fish. This method is already in general use.

13. First Large-Scale Electric-Trap Laboratory Constructed in Lithuanian SSR

"Laboratory of Electric Traps"; Viln'yus, Sovetskaya Litva, 12 Dec 62, p 2

"A large-scale laboratory of electric traps which will conduct experiments on the application of electric current for catching fish at sea is being erected in Smiltene (on the Nering spit). The construction of the first unit of the laboratory, which will be the first of its kind in the country, a two-story building, has been completed. Rooms have been equipped for scientific and technical workers and also for mechanical workshops.

"Several aquariums of various dimensions permit the workers of the laboratory to conduct research on electrical fields in water and the reaction of fish to electric current, electric light, and sound. At the laboratory, a reservoir of sea water (200 m x 15 m x 5 m) is being equipped. Water will be driven into it by powerful pumps. The laboratory workers will test here newly created instruments for catching and holding live fish.

14. Barents Sea Expedition Reported

"From Everywhere"; Moscow, Trud, 11 Sep 62, p 4

"An expedition to study the algae in the northeastern part of the Barents Sea has been carried out by a fishing trawler. Scientists have examined a large area of the sea bottom and have tested methods of gathering and planting marine plants."

Microscopy

15. Study of Living Organisms Claimed Possible With New Electron Microscope

"A Special Electron Microscope"; Nepszeru Technika, Budapest, Vol 11, Nov 62, back cover

This Hungarian source reports that an electron microscope recently constructed in the Soviet Union with a special gas chamber can be used to study living cells. With this equipment, one can observe chemical processes taking place in cells and the arising of new cells and microorganisms. Magnifications up to 1.2 million can be attained.

An accompanying photograph shows a technician operating the microscope.

16. Electronic Microscopes Aid Research Into Nature of Virus

"Into the Secrets of a Living Organism"; Frunze, Sovetskaya Kirgiziya, 16 Nov 62, p 4

With the help of powerful electron microscopes capable of enlarging an object 10,000 times and more, workers in the Laboratory of Electron Microscopy of the Academy of Sciences USSR are scrutinizing various biological objects: the finest structure of virus particles -- pathogens of infectious diseases in man, animals, and plants, and the structure of bacteriophages -- devourers of microorganisms.

An original method of preparing the specimens that are being examined has been developed in the laboratory, making it possible to study biological particles taken directly from their natural media. It is thus possible to avoid defects which earlier had seemed inevitable.

The head of the laboratory, Prof A. Ye. Kriss, discussed what could be seen with the new method:

"In studying measles and influenza viruses, it was discovered that the forms and dimensions of virus particles are much more variegated than had been imagined until now. The scientific workers of the laboratory succeeded in tracing the dynamics and mutual transmutation of these diverse forms. They found that the virus is not so primitive in its structure and function as it had seemed earlier -- it passes through complex paths of development and formation. This, obviously, causes its vitality in the human, animal, and plant organism. Observations are bringing us to an understanding of the complex, as yet little revealed, mechanism of the pathogenic activity of viruses.

"The new method of electron microscope research led to another curious discovery, also. In the soil, the tiniest bodies of a complex and original form were discovered. The possibility is not excluded that here we are dealing with organisms unknown up to this time. Further study of this problem is necessary."

17. New Electron Microscopes

"A Microscope for Biologists"; Kiev, Pravda Ukrainy, 24 May 62
p 1

"Sunny, 23 May. (RATAU). The Sumi Factory of electron microscopes and electroautomatics has begun to make a group of new, original apparatus. Such a microscope magnifies 200,000 times. With its aid, it is possible to see a molecule, a virus, to follow the process of development of a live cell. The microscopes are designated for research in fields of biology."

18. New Microscope Gives Images of Transparent Objects

"An Unusual Microscope"; Tbilisi, Zarya Vostoka, 29 Nov 62,
p 4

A microscope was demonstrated in the optics section of the "Machine Building" pavilion in VDNKh (Exhibition of Achievements of the National Economy) which enables the viewer to obtain an image of a transparent object. The scientists who constructed this instrument were aided by luminescence, the property of things to shine under the action of short blue-violet and ultraviolet rays.

A powerful quartz mercury lamp serves as the source of illumination of the preparations in the luminescence microscope. The image of objects is observed in the light of their luminescence with illumination from above and below. The magnification is 1,425 times.

Microbiology19. Counting of Bacteria With Membrane Ultrafilters

"Determination of the Total Number of Bacteria in Water on Membrane Ultrafilters With the Use of Triphenyltetrazol," by Yu. T. Loshakov, Candidate of Medical Sciences, Chair of Communal Hygiene, Khar'kov Medical Institute; Moscow, Gigiyena i Sanitariya, Vol 27, No 11, Nov 62, pp 48-49

"Membrane ultrafilters, widely used in water-sanitation bacteriology, are employed on a limited basis for determining the total number of bacteria in water. This is connected with the fact that bacteria colonies cultured on membrane ultrafilters are difficult to count because of the absence of contrast of the color of the colonies with the whiteness of the ultrafilter surface. Suggested methods of demonstrating the colonies with the aid of a different kind of dye (A. S. Razumov, Yu. Yu. Zuykova, etc.) have not succeeded for us -- not only are the colonies stained, but also the entire surface of the filter, although less intensively.

"In searches for improvement of the method of determining the total number of bacteria with the use of membrane ultrafilters which would maintain all the advantages of membrane ultrafilters and would not have the drawbacks of previous methods, we performed research with 2, 3, 5-triphenyltetrazol chloride (TTKh).

"TTKh is one of the five-membered heterocyclic compounds. It is a white powder readily soluble in water. Under the action of the reducing enzyme systems of cells of living organisms (dehydrase), it is transformed into formazine -- a compound which has an intense, dark red color.

"As a result of this, TTKh has found application also in bacteriological investigations.

"TTKh has a precision which is expressed, in relation to bacteria, by inhibiting their proliferation and even spore formation. Different species of bacteria show different sensitivity to it (Wundt, 1950). Proceeding from this, concentrations of TTKh which would not be toxic to certain species of bacteria were proposed. This permitted Vardi (1955) to obtain successful results in determining the total number of bacteria in food products; however, no acceptable methodology was proposed.

"The literature data prompted us to consider the use of TTKh for staining colonies cultured on membrane ultrafilters to determine the bacteria count in water. The results of the investigations were found to be very good; this led us to recommend the use of TTKh for calculating the total bacteria count in water according following methodology.

"After culturing the colonies on membrane ultrafilters, (standard meat-peptone agar was used as a culture medium), they were carefully removed from the surface of the agar with pincers and placed on a Petri dish with a filter paper moistened with a 1% solution of TTKh on the bottom. The ultrafilters must be adjacent to the filter paper. This ensures uniform staining of the colonies over the entire surface of membrane ultrafilter. Staining of the colonies begins within a few seconds and is gradually intensified. After staining, the dishes are placed in a thermostat for 90 minutes at the same temperatures at which the colonies were stained. After this, the colonies are counted by the usual method. The colonies have a bright red color against the white background of the membrane ultrafilter; the red color of even the smallest colonies which could not be detected by the use of other methods can be seen clearly. Only the colonies are stained, which facilitates counting them and increases the reliability of the results.

"After counting, the ultrafilters can be dried and stored. The stain on the colonies is durable and easily maintained, which is particularly significant in scientific investigations when the result of the work must be kept as a record. The convenience of the method can also be valuable for expedition conditions.

"A series of experiments with TTKh was set up at 37° C (24 hours) and 20° C (48 hours). The results obtained were consistently good. It is possible to use the method described for determining the total number of bacteria in open reservoirs; only corresponding dilutions of TTKh are necessary.

"Our investigations were performed with 0.5 and 1% solutions of TTKh. The best results--intensity and rapidity of staining--were obtained with the 1% solution."

20. New Staining Method for Bacteria

"A New Method for Vital Staining of Bacteria," by G. M. Ivanova, Tr. Alma-Atinsk. Zoovet. In-ta (Works of the Alma-Ata Zooveterinary Institute), No 12, 1960(1961), pp 619-622 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 24B121)

"The method is based on the fact that in the case of bacteria on a culture medium, aniline dyes (previously placed in the culture medium) enter into the normally occurring processes of metabolism with the nutrient substances in the cell and are selectively adsorbed on the structural elements of the cell."

21. New Method of Preparing Culture Media Patented

"A Method of Preparing a Culture Medium for Microorganisms," by K. N. Buchnev, Class 30,h, 14, No 71639 (244/350863 from 16 January 1947), registered in the Ministry of Sovkhozes USSR; Moscow, Byulleten' Izobreteniy, Vol 39, No 16, Aug 62, p 85.

"This method of preparing a culture medium for microorganisms by enzymatic hydrolysis of plant proteins differs in that pea meal is extracted with a weak sodium chloride solution in a weakly alkaline reaction, and the extract obtained is subjected to hydrolysis first with the aid of pepsin and then pancreation, after which the solution obtained is purified by the usual method."

22. Military Medical Journal Reports on Atypical Dysentery Pathogens

"The Epidemiological Significance of Atypical Strains of Dysentery Pathogens," by P. S. Sal'nikov and M. M. Yakuba, Voyenno-Meditsinskiy Zhurnal, No 8, Aug 62, pp 55-56 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 24B357)

"In clinically manifested forms of dysentery, both acute and chronic typical and atypical strains of dysentery and encountered in an approximately identical percentage of cases. Atypical strains of dysentery pathogens are characterized by lost agglutination capability to a different extent and also by a changes in cultural and biochemical properties. Considering this, it is necessary to demonstrate similar cultures very carefully, since atypical strains have great epidemiological significance in the ecology of bacterial dysentery."

23. Strain 54 Bacteria Found To Be Effective Against Water Rats

"Struggle With Water Rats by Bacteriological Means," by M. I. Gromova, assistant in the department of microbiology at Omsk Veterinary Institute; Moscow, Zashchita Rasteniy ot Vrediteley i Bolezney, No 10, 1962, p 26

The article discusses field tests performed by the laboratory of insect microbiology and virology of the Biological Institute, Siberian Department of the Academy of Sciences, USSR.

Isachenko bacteria and strain 54 (a variant of Gertner's paratyphoid microbe) were tested to determine their effectiveness against water rats. Strain 54 was found to be almost twice as effective as Isachenko bacteria.

24. Microbial Control of Plant Pests

"Dry Microbial Preparations for Control of Insect Pests of Plants and Their Use by the Spray Method," by V. T. Bobovich, Byul. Nauchno-Tekhn. Inform. po S.-Kh. Mikrobiol. (Bulletin of Scientific-Technical Information on Agricultural Microbiology), No 10(2), 1961, pp 35-37 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 24Zh280, by B. Korbin).

"A laboratory method of obtaining dry preparation of *Chromobacterium prodigiosum* and the crystalline dorm of *Bacillus cereus* cultured on damp grain smut is described. The maximum output of *C. prodigiosum* is achieved on the 2d-3rd day after seeding, and of *B. Cereus* spores, on the 5th-6th day. In a field test (Leningradskaia Oblast), spraying of 2 kg/ha of dry *C. prodigiosum* of *B. cereus* capsules guaranteed 97% destruction of cabbage butterfly caterpillars."

Radiobiology25. Ultraviolet Radiation Increases Crop Yield

"Radiation of Grains Increases Their Yield"; Kiev, Pravda Ukrainy, 16 Oct 62, p 2

"KHEMEL'NITSKIY, 15 October, Correspondent, Pravda Ukrainy. The Chair of Physics of the Kamenets-Podol'skiy Agricultural Institute, which is headed by I. Ya. Malishchuk, has been investigating the effect of various types of radiation on the vital processes of agricultural plants for 8 years.

"During last year, at the educational-experimental farm of the Institute of Corn, irradiation by ultraviolet rays produced 80-90 centners of grain per hectare, but in control parts the yield was 50-60 centners per hectare. In the kolkhoz "Shlyakh Lenina" of the village Nesterovets, the grain yield per hectare was about 18 centners.

"During the present year, experiments have started on a 20-hectare area in the kolkhoz imeni 22d Congress of the CPSU of Chemerovetskiy Rayon. The graduates of the Institute of Aleksandr Petrov and Yelena Kuts, together with the kolkhoz farmers, conducted these experiments. Despite poor weather, the green mass, together with the crops, amounted to 500 centners per hectare, which is almost twice as much as the growth in the control areas. The corn grain, together with the cobs, amounted to 120-130 centners per hectare.

"The institute plans, also, to conduct experiments on 100-hectare parcels in three kolkhozes of adjoining rayons.

"The effect of ultraviolet rays is being tested also on cereals."

III. MEDICINE

Aerospace Medicine26. Ecological Cycle For Space Flights of Long Duration Discussed

"On the Question of the Nutritional Value of Unicellular Algae (a Survey)," by N. N. Boyko, V. P. Bychkov, Yu. I. Kondrat'yev, and A. S. Ushakov; Moscow, Voprosy Pitaniya, Vol 21, No 5, Sep/Oct 62, pp 76-81

The authors review briefly the pertinent literature in aerospace medicine and biology in which experiments and studies dealing with a closed environment for astronauts in flights lasting several years are discussed. The majority of aerospace medical scientists of various countries are of the opinion that the development of closed ecologies for long space flights is very difficult to realize. They indicate that unicellular algae must be considered as one of the principal components of a closed ecological cycle.

27. Relationship Between Biological Rhythms and Time and Space

"Biological Rhythms and Astronautics," by Candidate of Medical Sciences Yu. Fedotov and Physician Ye. Yudin; Moscow, Krasnaya Zvezda, 18 Sep 62, p 6

The authors discuss in this report the biological rhythms in a living organism which they regard as natural tests of tolerance. In humans and in higher animals, the nervous system is involved. Most organisms are very much dependent on changes in light and darkness. If the day-night ratio is suddenly changed, the organism must readjust. It is not known yet where the limits for cosmic influences lie. This field of study remains to be investigated: it is important in attempts at adaptation in space.

Experience in the conquest of space has shown that a biological "clock" is not subject to our will: it functions in outer space in the same manner as it does on earth. Results of the flights of Soviet astronauts G. Titov, A. Nikolayev, and P. Popovich confirm this. In spite of the fact that they saw sunrise more often than it is encountered on earth over the same period, their physiological functions over a period of 24 hours remained the same as on earth.

Alteration of biological rhythms may be necessary during flights of long duration in outer space or flights to other planets where 24-hour cycles are different from those of earth. The authors state in this

report that they have no doubt that an acceptable solution of the problem of biological rhythms will be found by the time interplanetary flights are undertaken. At the present stage of development of space exploration, alteration of rhythms would not enhance the survival potential of human astronauts.

28. Low Body Temperature Increases Tolerance of Animals in Space

"When Blood Is Heavier Than Mercury...."; Moscow, Komsomol'skaya Pravda, 1 Dec 62, p 4

"For the first time in the history of a young science, space medicine, experimental animals have withstood the stress of 75 Gs. Animals do not usually tolerate such conditions. Medical scientists G. Glod, V. Aganov, and N. Timofeyev succeeded in producing such tolerance by reducing the body temperature of animals to 6°C-4°C.

"There is one laboratory in the Academy of Sciences USSR the principal task of which is to conduct studies on methods of preserving life under unusual environmental conditions. Scientists are searching at present for the limits of biological survival of an organism under various conditions. They succeeded in discovering that animals tolerate some of the conditions encountered in outer space when their body temperature is lowered.

"Solution of the problem of survival of an organism under unusual conditions (G forces, radiation, and others) will contribute to the mastery of outer space."

29. Maintenance of Life and Preservation of Efficiency During Weightlessness Under Space-Flight Conditions

"Some Physiological Human Reactions Under Conditions of the Alternating Effect of Excessive G Forces and Weightlessness," by I. I. Kas'yan; Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 6, Nov/Dec 62, pp 896-908

This report describes physiological responses in 55 healthy men from 22 to 43 years of age during actual parabolic flights on fighter planes. A total of 78 flights in which it was possible to reproduce weightlessness lasting up to 45 seconds were made. Changes in the basic indicators of the function of cardiovascular and respiratory systems during the alternating action of excessive G forces and weightlessness were found to be within limits of physiological deviation, brief, and reversible in character.

Increase in the frequency of pulse and respiration rates, as well as in some functional changes of cardiac activity, took place in response to the action of G forces of up to 3.5 units. A tendency toward normalization of the function of the cardiovascular system was observed during a brief period of weightlessness. Individual peculiarities in physiological reactions to the alternating action of increased and decreased gravitation were observed in the men used in investigation.

Fluctuations in the rhythm of cardiac activity noted during above-mentioned brief period of weightlessness were similar to those observed in Yu. Gagarin and G. Titov, who were in a state of weightlessness for a prolonged period.

30. Research on Problems Involving Manned Exploration of Deep Space

"For People of the Planet Earth," by Academician V. N. Chernigovskiy, director of the Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR; Tbilisi, Zarya Vostoka, 5 Aug 62, p 2

The author notes data collected from space flights to date have shown that G forces and weightlessness are tolerated well by living organisms, leaving no harmful effects after re-entry, and that radiant energy is of neither immediate nor remote danger to life.

All flights into space heretofore, however, were along orbits where radiant energy was not at maximum level. Powerful, and yet little known, radiation belts would be encountered in flights to other planets. Human astronauts would then need reliable protection against radiant energy. The same can be said about the effects of long periods of weightlessness on the human organism. No one can yet state with assurance that exposure to long periods of weightlessness would not produce changes in human organisms. The possibility of creating an artificial gravitational force on future space vehicles is, therefore, not excluded.

The most complex problem on hand is to create a packaged closed circuit environment for space travelers. Plants must be selected which are edible, occupy little space, multiply rapidly, give out oxygen, and absorb carbon dioxide readily. The problem of selection of "space" animals is even more complex.

There is still another problem to be considered. The forms of microorganisms on other planets may be different from those on earth, and a human organism may not be able to adapt itself to these extraterrestrial forms. Space travelers must be protected from this.

The author of this article thinks that all the above-mentioned problems will eventually be solved and that the path for human penetration of deep space will then be cleared.

31a. Radial Accelerations and Biochemical Changes in Rats

"Changes in the Content of Some Biologically Active Substances in Rats Under the Effect of Radial Accelerations," by I. M. Khazen, and I. L. Vaysfel'd; Moscow, Voprosy Meditsinskoy Khimii, Vol 8, No 5, Sep/Oct 62, pp 493-497

A correlation was sought between the intensity, frequency, duration, and magnitude of radial acceleration and the following factors: (1) histamine and epinephrine content in the brain, lungs, and intestinal mucosa, (2) acetylcholine and epinephrine content in the blood, and (3) urinary excretion of 5-hydroxyindole acetic acid.

Results showed that after the single actions of positive radial accelerations, the histamine content increased in the intestinal mucosa, but it decreased significantly in the lung and brain tissues. In these same tissues there was a rise in diamine oxidase activity and also in the adrenalin-like substances -- especially in the lung and brain tissues.

After a single action of negative accelerations, the histamine content and the diamine oxidase activity are decreased in these tissues, and the content of adrenalinlike substances decreases in the intestinal mucosa and brain tissue, but no change was evident in the lungs.

After multiple and oft-repeated actions of positive accelerations, there was a drop in the content of histamine and adrenalinlike substances in the intestinal mucosa and in the brain tissue.

Under similar conditions of testing, the urinary excretion of 5-oxyindole acetic acid was diminished, and the changes in the excretion of the acid had a definite relationship to the magnitude, frequency, and duration of the action.

31b. Czechoslovak Biological Testing Method Adopted in Soviet Space Medicine Program

"Czechoslovak Method in Soviet Cosmic Research"; Bratislava, Svet Vedy, No 11, Nov 62, p 699

Soviet scientists have subjected animals returning from space flights to various tests, including a test designed to show the extent to which living organisms are subjected to effects of ionizing radiation

during space flights and to show whether the organisms are deprived of the protective influence of the earth's atmosphere under such conditions. The test was developed in 1958 by Czechoslovak physiologists at the Division of Metabolism of the Institute of Physiology, Czechoslovak Academy of Sciences. Since ionizing radiation leads to increased breakdown of nucleic acids and disorders in their structure, the Czechoslovak scientists concluded that metabolic changes resulting from this development will be reflected in the urine. It was found that even a relatively low degree of radiation will result in appearance of some components of the nucleic acids, particularly desoxycytidine, in the urine. It immediately became apparent that as the degree of radiation increased, the quantity of this material in the urine increased. When these original findings were published, Soviet physiologists began to cooperate with the Czech scientists to ensure that the test might be used in Soviet cosmic research.

Burn Trauma

32. Effect of Burns on Synapses of Sympathetic Ganglia

"Histopathology of the Synapses of Sympathetic Ganglia in Thermal Burns," by R. A. Pereverzeva, Department of Burns, Institute of Surgery imeni A. V. Vishnevskiy; Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, Vol 7, No 6, Nov/Dec 62, pp 75-77

Studies of the pathomorphology of synaptic nodes of the autonomic nervous system obtained from persons who died from burn shock and toxemia disclosed manifestations of acute excitation and primary forms of degeneration. Considerable shifts in the interneural connections were also noted. These modifications, it is thought, may be the reason for the modifications of the neuroregulating mechanisms and the development of trophic changes in the organs and tissues which take place in the course of burn sickness.

33. Effect of Burns on Afferent Endings

"Concerning the Pathomorphology of Afferent Endings in Burn Sickness," by Ya. L. Karaganov, Chair of Normal Anatomy, Second Moscow Medical Institute imeni N. I. Pirogov; Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, Vol 7, No 6, Nov/Dec 62, pp 71-74

Microscopic investigations of the morphology of receptor endings and afferent fibers obtained from persons who died at different periods as a result of massive thermal burns disclosed considerable modifications

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of these tissues. These modifications were found to be the result of hypoxia which occurs in burn sickness. The method of impregnation of the tissues with silver was used in the investigations.

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34. Hexonium in the Therapy of Hypertension

"Certain Data on the Hypotensive Action of Hexonium," by N. I. Shkuridina and I. G. Anisimova, Tr. Voronezhsk. Med. In-ta (Works of the Voronezh Medical Institute), 1962, 44, pp 121-123 (from Referativnyy Zhurnal -- Biologiya, No 20, Oct 62, Abstract No 20 T19)

"Hexonium in doses of one milliter of a 2-percent solution was administered to 50 healthy and sick persons not suffering from affections of the cardiovascular system. A decrease in maximal and minimal arterial pressure was noted in all of the people following a single administration of the hexonium. No essential changes in the circulation rate and the cardiac cystological volume were noted as a result of the administration of the prepapation (data by a ballistocardiogram). The hypotensive action of hexonium is explained as being due to its effect on the automatic ganglia and the subsequent decrease in the tonus of the small peripheral vessels (precapillaries)."

35. Effect of Adenosinetriphosphoric Acid on the Heart

"Cardiac Failure Induced by the Administration of Potassium Citrate and the Effect of Adenosinetriphosphoric Acid on the Dynamics of the Restoration of Cardiac Rhythm," by J. Hanzl, B. Potrusil, and J. Uhlir, Rozhl. Chir. (Czechoslovakia), 1962, 1, pp 12-18 (from Meditzinskiy Referativnyy Zhurnal, Section 4, No 7, Jul 62, Abstract No 2627, by M. Brzhezina)

"Cardiac failure was experimentally induced in dogs by the administration of potassium citrate (the Meyaros method). The effect of adenosine triphosphoric acid injected into the aorta was tested on 15 dogs. The acid, in flowing through the coronary vessels, had a beneficial effect on the activity of myocardium. Cases of ventricular fibrillation were rare. The acid exhibited a beneficial effect also on a heart already in a state of fibrillation. The frequency of small contractions was decreased, and these were easily eradicated."

Epidemiology

36. Polio Incidence Reduced in USSR

"Poliomyelitis Has Been Conquered"; Moscow, Meditinskiy Rabotnik, 11 Sep 62, p 3

It is reported that the incidence of poliomyelitis was decreased in 1961 in comparison with 1958 from 10.66 to 1.7 persons per 100,000 and that it is possible in practice to consider the disease sporadic in the USSR. This information was announced at a press conference for Soviet and foreign journalists, held by the State Committee on Cultural Relations With Foreign Countries, in July 1962.

37. Leprosy Outbreak in Turkey Reported

"Leprosy in Turkey"; Riga, Sovetskaya Latviya, 19 Dec 62, p 3

"Stambul, 18 December (TASS). Mass incidence of leprosy has been noted in the eastern regions of Turkey. According to a press report, more than 4,000 persons have it in Van and Khakya." "

38. Plague in Viet-Nam

"News From Different Countries"; Moscow, Pravda, 5 Sep 62, p 5

"New Cases of Plague have been reported in South Viet-Nam, 15 miles northeast of Saigon. A total of 43 cases of plague, 2 of them with a fatal outcome, have already been noted in this area."

Forensic Medicine

39. Forensic Chemistry Research

"Basic Trends in the Development of Forensic Chemistry Problems in the USSR During the Past Five Years," by M. D. Shavaykova, Pharmacy Faculty, First Moscow Order of Lenin Medical Institute imeni I. M. Schenov; Moscow, Apteknoye Delo, Vol 11 No 5, Sep/Oct 62, pp 16-22

Research work on problems of forensic chemistry during the past 5 years was carried out in accordance with Problem No 47 of the Academy of Medical Sciences USSR, currently Problem No 11 of the Council of the

Coordination of Scientific Research of the Ministry of Health of the USSR. The Pharmaceutical Institutes and the Forensic Chemistry Section of the Scientific-Research Institute of Forensic Medicine of the Ministry of Health of the USSR played a leading role in the successes attained in the area of Forensic Chemistry. The basic trends of the research work that was carried out were as follows:

1. Isolation, purification, discovery, and identification of alkaloids.
2. Application of crystallooptics in the microcrystalloscopic analysis of alkaloids.
3. Fractional methods of analysis of metallic poisons and arsenic in forensic chemistry.
4. Forensic chemical and forensic medical aspects of alcohol.

Although the relatively small number of research workers attained considerable successes in the area of forensic chemistry, it could have been even more successful had it not neglected some of the more important phases of research work. New methods of analytical chemistry and physico-chemical methods of analysis have been insufficiently applied; little attention has been paid to theoretical and practical problems connected with the use of barbiturates, glycosides, synthetic poisons and potent drugs, insecticides, and the technology of drug preparation. Broader participation in the research work in this area by forensic chemists and physicians is urged.

Gerontology

40. Effect of Aging on the Myocardium

"Concerning the Problem of the Investigation of the Constricting Functions of the Myocardium in Persons of Old Age,"
by D. S. Kakiashvili and T. A. Teslya, Sukhumi Second City
Hospital imeni V. A. Shervashidze; Tbilisi, Soobshcheniya
Akademi Naul Gruzinskoy SSR, Vol 29, No 2, Aug 62, pp 239-
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Phonocardiographic investigations of the constricting functions of the myocardium in 65 persons, 80-99 years old, disclosed that the fluctuations of these functions in these people were within the limits of the fluctuations in healthy younger persons. Clinical observations of the old persons failed to establish any symptoms of ergodynamic inadequacy: the myocardium in older persons possesses adequate energy capacity for the necessary rise in intraventricular pressure.

Hematology41. Retardation and Acceleration of Blood Coagulation by Food Fats

"Effect of Food Fats on Blood Coagulation" by D. S. Dubrovskiy, Tr. Leningr. San.-Gigiyen. Med. In-ta (Works of the Leningrad Sanitary-Hygienic Medical Institute), 1962, 67, pp 202-206 (from Referativnyy Zhurnal Khimiya, Biologicheskaya Khimiya, No 19, 10 Oct 62 Abstract No 19 81156, by A. Artem'yev)

"Retardation of the rapidity with which blood coagulated under the influence of butter, sunflower oil, and lard was noted in young people (22 to 25 years of age). The effect of the food fats on blood coagulation in older people (50 to 60 years of age) was differently expressed: butter and lard accelerated blood coagulation; vegetable oil retarded the rapidity of blood coagulation. In experiments in vitro, maximal acceleration of blood coagulation was induced by dairy fats: butter affected thromboplastic activity in 15 minutes; heated butter in 20 minutes (60 minutes in control experiments). Phosphatide, one of the basic components of food fats, induced greater thromboplastic activity. Thermal treatment of food fats reduced their ability to hasten blood coagulation."

Immunology42. Ninth Report in Aerosol Immunization Series

"Aerosol Immunization With Dry Powdered Vaccines and Toxoids; Report IX: Further Study of the Reactogenicity and Immunological Effectiveness of the Method of Aerosol Immunization With Powdered Brucellosis Vaccine," by N. I. Aleksandrov, N. Ye. Gefen, K. G. Gapochko, N. S. Garin; A. I. Maslov, V. V. Mishchenko, and M. S. Smirnov; Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunologii, Vol 33, No 12, 1962, pp 95-102

On recommendation of the Serum-Vaccine Committee, the authors undertook a study of the aerosol method of immunizing a large group of people (1,201) against brucellosis in 1958-1960. Of this number, 305 were workers at the "Karmanovo" sovkhos, which had been reported for 15 years as a focus of brucellosis of the melitensis; 180 of these workers had been previously inoculated against brucellosis.

Results of the studies showed that all healthy persons between the ages of 18 and 60 who have no medical contraindications to inoculation and have not been sensitized to brucellosis can be subjected to aerosol immunization with powdered brucellosis vaccine. The optimum dose is 250-820 million live *Brucella* of vaccine strain 19-BA. After mass aerosol immunization, reactogenicity was determined by the number of persons who had been sensitized to brucellosis. In the absence of positive serum allergic reaction in persons earlier subjected to subcutaneous or cutaneous inoculation with live brucellosis vaccine, aerosol revaccination caused no increased reaction. Aerosol immunization produced rapid and durable immunological reconstruction of the organism for one year (the observation period). Continued intensive study of the nature of postvaccinal reactions observed after subcutaneous, cutaneous, and aerosol immunization with live brucellosis vaccine is considered necessary. The search for new, more modern methods of detecting persons sensitized to brucellosis should be recognized as extremely urgent.

43. Polyvaccine Characteristics Tested on Volunteers

"The Characteristics of Polyvaccine. Report II: Immunological Characteristics of Polyvaccine According to Data From Observations on Volunteers," by T. V. Yglova, N. S. Nikulnikova, and A. G. Grigor'yeva-Berenshteyn, Leningrad Institute of Vaccines and Sera; Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 33, No 12, Dec 62, pp 59-64

Immunological shifts were observed in volunteers as a result of vaccination with different variants of polyvaccine (production type series 65, without the cholera component, deformedalinized according to Avtonomova's method, and with 2% novocain). The increase in agglutinins in the sera of immunized persons was clearly manifested with respect to typhoid-paratyphoid A and B and to Flexner c dysentery bacteria. An increase in the preventive properties of the sera against typhoid, paratyphoid B, Flexner c dysentery, and Sonne cultures was noted. Revaccination stimulated the elaboration of agglutinins to all the cultures studied except Sonne dysentery. An increase in preventive properties also appeared after revaccination with respect to paratyphoid B and typhoid bacteria, and an insignificant increase, with respect to Sonne dysentery.

44. Tetravaccine Administered During Hypothermy

"A Study of the Complex of Immunobiological Reactions After The Introduction of Tetravaccine to an Organism Under Conditions of Hypothermy," by T. G. Starkova, First Leningrad Medical Institute imeni I. P. Pavlov; Moscow, Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, Vol 33, No 12, Dec 62, pp 130-137

The complex reaction of 35 rabbits to the introduction of tetravaccine consisting of typhoid-paratyphoid and dysentery bacteria under the effects of hypothermy and anesthesia was evaluated. The vaccine was obtained from Leningrad Institute of Vaccines and Sera. The leukocyte reactions, complement titer, blood serum protein fractions, agglutination reaction, phagocytosis, and weight, body temperature, and blood plasma stability were scrutinized. Hypothermy (to 27-28° C) was produced in a special, ice-filled chamber. The rabbits were anesthetized with babbamil and ether.

Results of the various indexes examined are shown in four tables and two graphs. Several changes in the dynamics of the formation of the combined specific and nonspecific reaction of the rabbit organism to the introduction of these antigens under the aforementioned conditions were noted. Vaccination of animals under hypothermy was accompanied by the development of a more pronounced and prolonged negative phase of the immunization process and by extension of compensatory phase. Mechanisms of change in factors of natural nonspecific immunity were most disturbed under hypothermy; specific, acquired immunity, developed against an "already altered initial background", did not achieve its maximum development, remaining at a lower level in comparison with the control animals. Nonspecific immunobiological reactions have great significance in the development of mechanisms of acquired postvaccinal immunity. Their condition depends to some extent on the final result of vaccination; it is, therefore, possible to foresee the direction of the development of acquired immunity by observing the nature of changes in the nonspecific factors of immunity under the effect of antigen.

45. Reaction to Tularemia Vaccination Described

"An Allergic Reaction to Vaccination Against Tularemia," by D. M. Dalmatov, Chair of Infectious Diseases (Head, Associate Professor V. P. Konstantinov), Omsk Medical Institute imeni M. I. Kalinin; Moscow, Sovetskaya Meditsina, Vol 26, No 10, Oct 62, pp 127-128

Mass inoculation of the Omsk population with cutaneous live dry tularemia vaccine was undertaken in the summer and fall of 1961, in connection with a tularemia outbreak. The author states that although the vaccine

is noted for low reactogenicity, increased sensitivity of an organism inoculated with it is encountered in rare cases. One such case history that of a 54-year-old patient who entered the clinic on the 21st day of illness, is described in detail. He had become ill on the 7th day after vaccination, his major complaints being fever, headache, nausea, and general debility. The diagnosis was infection allergy to cutaneous inoculation with dry live tularemia vaccine. The patient was treated with dimedrol, nistatin, and clacuium chloride; marked improvement in his condition occurred only after the addition of prednisolone. He was discharged on the 35th day after admission in good condition;

The author suggests that the vaccine process in this patient followed this course as a result of previous sensitization of the organism with small doses of tularemia pathogen which had entered by the transmissive or alimentary route. The organism which had been sensitized in this manner responded with a violent process which was manifested by hyperinflammation of the skin and mucosae.

46. Immunization Against Encephalitis, Tularemia, and Brucellosis

"The Effectiveness of Experimental Combined Vaccination Against Virus Encephalitides, Tularemia, and Brucellosis; Report I: A Study of Combined Vaccination Against Virus Encephalitides, Tularemia, and Brucellosis in Rabbits," by N. V. Ryshov, Military Medical Order of Lenin Academy imeni S. M. Kirov; Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol. 33, No 12, Dec 62, pp 120-122

In a study of combined immunization against infection with natural foci, rabbits were vaccinated with inactivated viruses of tick-borne and Japanese encephalitis and with live tularemia and brucellosis vaccines. The virus antigens were prepared in the form of brain tissue preparations purified from lipoids by Il'yenko's method. Formalized vaccines were prepared "according to the instructions accepted in practice" from viruses treated in this manner. Tularemia vaccine in the form of a live dry vaccine for cutaneous use (series No 665) was prepared at the Institute of Epidemiology and Microbiology imeni Gamaleya, and dry live brucellosis vaccine for cutaneous use (series No 1571), from strain No 19 at Kashintsevskaya Biofabrika.

In the first series of experiments, 16 rabbits were immunized with the encephalitis vaccines subcutaneously and the tularemia and brucellosis vaccines cutaneously. Rabbits immunized separately were controls. Combined immunization in the following combinations was carried out in the second series: (1) tick-borne encephalitis vaccine subcutaneously,

C-O-N-F-I-D-E-N-T-I-A-L

and tularemia vaccine, cutaneously; (2) tick-borne encephalitis vaccine subcutaneously, and brucellosis vaccine cutaneously; (3) Japanese encephalitis vaccine subcutaneously, and tularemia vaccine cutaneously; (4) Japanese encephalitis vaccine subcutaneously, and brucellosis cutaneously; (5) first, tularemia and brucellosis vaccines cutaneously, and, 10 days later, tick-borne and Japanese encephalitis vaccines subcutaneously; (6) first, tick-borne and Japanese encephalitis vaccines subcutaneously, and, 10 days later, tularemia and brucellosis vaccines cutaneously. Rabbits immunized separately with each of the vaccines again served as controls.

Combined immunization with all of these vaccines did not prevent the formation of antibodies to any of the antigens. Local para-allergy to tularemia allergen occurred after both combined and separate immunization.

47. Action of Combined Vaccination and Irradiation

"The Stimulating Effect of Combined Immunization With BCG Vaccine and Other Vaccines on Immunogenesis of Irradiated and Nonirradiated Mice," by N. N. Klemparskaya and G. A. Shal'nova; Moscow, Byulleten' Eksperimental'noy Biologii i Medsiny, Vol 54, No 9, Sep 62, pp 78-81

A study of the effectiveness of combined immunization with BCG vaccine and vaccines from gram-positive bacteria on 1,474 irradiated and nonirradiated mice weighing 18-20 gm is reported. Three types of antigens were used: a live culture of E. coli (25 or 100 million) subcutaneously (220 mice); a monovaccine from B. Breslau No 2503 killed with heat at 56-68°C (200 million) intracutaneously (439 mice); and a tetravaccine from the Ufa Institute of Vaccines and Sera (against typhoid, paratyphoid B. Flexner, and Sonne dysentery; standard 2, 25 billion) in a dose of 0.25 ml subcutaneously. Dried BCG vaccine, obtained from the Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, was diluted with physiological solution and mixed with the vaccine being tested immediately before injection.

The mice in each experiment were divided into the following groups: (1) those inoculated with one test antigen; (2) those inoculated with a mixture of antigen with one mg of BCG vaccine; (3) those inoculated with BCG vaccine alone (one mg); and (4) noninoculated controls which received an injection of physiological solution in the same volume as that of the vaccine. Twelve mice at a time received a 300 r dose of Z-rays from an RUM-3 apparatus. Immunity was tested by infecting the animals with live microorganism cultures.

48. Reports on Vaccine Prophylaxis Cited

"Live Attenuated Vaccines in the Specific Prophylaxis of Certain Infectious Diseases," by B. Ya. El'bert, Sb. Nauchn. Tr. Belorussk. In-t Epidemiol., Mikrobiologii, i Gigiyeny (Collection of Scientific Works of the Belorussian Institute of Epidemiology, Microbiology, and Hygiene), No 4, 1961, pp 302-307, (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 24B321)

[No abstract given.]

"Experience in Studying the Reactogenicity and Effectiveness of Polyvaccines in 1958-1959," by A. S. Milovanova, Tr. Kazakhsk. In-ta Epidemiol., Mikrobiol. i Gigiyeny

(Works of the Kazakh Institute of Epidemiology, Mikrobiol., and Hygiene), No 4, 1961, pp 304-315 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 24B322)

/No abstract given./

"The Epidemiological and Immunological Effectiveness of Whooping Cough-Diphtheria Vaccine," by T. G. Filosofova, L. P. Milovanova, and A. N. Silyavkina, Materialy Nauchn. Konferentsiy, Kiyevsk. N.-I. In-ta Epidemiol. i Mikrobiol. (Data From a Scientific Conference at Kiev Scientific-Research Institute of Epidemiology and Microbiology), No 3, 1961, pp 224-227 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 24B323)

/No abstract given./

49. Polyvaccine Studies at Kazakh Institute

"Experience in Studying the Reactogenicity and Effectiveness of Polyvaccines in 1958-1959," by A. S. Milovanova, Tr. Kazakhsk. In-ta Epidemiol. i Mikrobiol. (Works of the Kazakh Institute of Epidemiology, and Microbiology), No 4, 1961, pp 304-305 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 24B322)

/No abstract given./

50. Preparation of Antianthrax Gamma Globulin

"Results of a Study of the Effectiveness of Different Methods of Preparing Antianthrax Gamma Globulin," by O. P. Silin, N. V. Klenina, and Ye. P. Lebedeva, Ukrainian Scientific-Research Institute of Experimental Veterinary Medicine; Kiev, Visnik Sil's'kogospodars'koy Nauki, No 8, Aug 62, pp 95-101

A comparative evaluation of methods of preparing gamma-globulin suitable for use in antianthrax immune serum of cattle showed that the rivanol method of Ya. Goraneyshi and R. Smetany can be recommended. However, this method can be used only if the simultaneous preparation of other serum preparations is not planned.

51. Rumanians Give Antiflu Vaccine

"Antiflu Vaccination Has Begun"; Bucharest, Muncitorul sanitar, 22 Dec 62, p 1

The citizens of Bucharest are being given an antiflu vaccine. Dispensed in the form of nose drops, the vaccine is described as being "bivaccine" A2+B- with a live virus apathogenic to man. District and hospital doctors administering it have been informed that fever, acute catarrh, cardiovascular diseases, and pregnancy are contraindications.

52. Czechoslovakia Begins Production of Aujeszky's Disease and Other Vaccines

"One Milliliter of Vaccine Is Enough"; Bratislava, Pravda, 29 Jan 63, p 4

On 28 January, the "Bioveta" Enterprise in Nitra began production of a new vaccine against erysipelas suis. This is a live virulent vaccine developed by Rumanian veterinarians. "Bioveta" will produce enough of the vaccine in 1963 to inoculate 3.5 million hogs. The new vaccine is easier to produce and to administer than earlier types. Only one inoculation with one milliliter of the substance is required.

The "Bioveta" Enterprise will begin production of several other vaccines, including a live type against Aujeszky's disease, a lipoid type against fowl cholera, and a vaccine against ornithic small pox made from chicken virus.

During 1963 the enterprise will begin production of a preparation for immunization of poultry against fowl plague.

Medical Equipment

53. ISL-2 Apparatus for Extracorporeal Circulation

"Extracorporeal Circulation in the Surgery of the Heart and Trunk Vessels," by F. B. Balyuzek, M. I. Bumistrov, N. K. Dzutsov, N. I. Yermilov, T. V. Karimova, V. I. Skorik, B. S. Uvarov, Yu. N. Shanin, and T. N. Shamarina, Clinical Surgery for the Advanced Training of Physicians, No 1, Military-Medical Academy imeni S. M. Kirov; Grudnaya Khirurgiya, Vol 4, No 4, Jul/Aug 62, pp 33-39

Description of the ISL-2 extracorporeal circulation apparatus is given in the article. It was designed to take the place of previously used devices which were found to be inadequate. The use of ISL-2 in

50 operations in which the application of extracorporeal circulation was necessary established the satisfactory performance of the apparatus. Its application does not depress any of the vital processes of the organism.

54. New Medical Equipment

"Soyuzmedinstrumenttorg [State Union Trust In the Trade of Medical Instruments]"Shop"; Frunze, Sovetskaya Kirgiziya, No 296, Dec 18, 62, p 4

The Soyuzmedinstrumenttorg advises the medical establishments of the country that the following electronic equipment and instruments are now available: the DEKG-o7 dynamoelectrocardiograph for application in the study of the physiology and pathology of the cardiovascular system -- cost, 440 rubles; Luch [Ray]-58, for deep warming of deep-seated muscle tissues -- cost, 770 rubles; an oxyhemograph, a portable polarimeter, an apparatus for vertical electrophoresis PEVF-1, a roentgenokymograph, different types of suturing instruments, and other equipment and instruments.

Write to Moscow B-123, 1-yy Akademicheskii Proyezd, No 17. Telephones: V 7-73-74, V 7-60-14.

55. Electrocardiometer Designed

"Electronic Registrars"; Moscow, Meditsinskaya Gazeta, 25 Dec 62, p 3

An electrocardiometer which signals the cessation of cardiac constriction and release an electric impulse which restores the heart beat has been designed at the Leningrad Bureau of Biological and Physiological Instrument Designing, in cooperation with local clinicians and physiologists. The apparatus also prevents fibrillation. A Cardiocylcograph which makes possible cardiological examination under polyclinical conditions has also been designed. The instrument determines the pulse rate and the degree to which the vessels are filled with blood.

56. New Oxyhemograph Model

"Circulating Blood Oxyhemograph (of the POG-01 Type): A Device for Continuous Recording of the Degree of Oxygen Saturation of the Blood," by L. F. Sochivko, G. Sh. Vasadze, and A. M. Pavlova (Leningrad), the "Biofizpribor" Design Technological Bureau and the Chair of Pathologic Physiology of the S. M. Kirov Military Medical Academy; Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 6, No 5, Sep/Oct 62, pp 80-81

A new device, the POG-01 oxyhemograph, is described in this article. This device makes it possible to gauge and record, for a long period, the degree of oxygen saturation of blood circulating in large blood vessels without dissecting these vessels and without resorting to anticoagulants. Containing two transducers, this device makes it possible to record on one oxyhemogram, the degrees of oxygen saturation of blood circulating in two blood vessels simultaneously.

Operation of this device is based on photometric evaluation of the exposed blood vessel. This is performed with the aid of a transducer containing a selenium and silver sulfide photoelement and an STs-76 incandescent lamp.

57. New Electronic Diagnostic Machine

"Electronic Physician"; Tbilisi, Zarva Vostoka. 29 Nov 62,
p 4

In connection with the new work of V. K. Kabulov, corresponding member of the Academy of Sciences Uzbek SSR, "medical abilities" were discovered in an electronic machine. The machine makes a diagnosis by comparing the symptoms that have been registered during examination of the patient with the characteristic symptoms of a disease.

The machine was tested on the diagnosis of a number of children's diseases and pleurisy. Now it has been given a new program which enables it to distinguish according to 78 symptoms among 10 similar blood diseases.

58. New Electronic Instrument Records Patient's Condition During Operation

"Surgical Chronicler"; Moscow, Izvestiya, 25 Nov 62, p 5

The "surgical chronicler," produced by the "Biofizpribor" plant, is an electronic instrument on which all the information that a surgeon could possibly need to know during the course of an operation is recorded. The instrument stands directly in front of the operating table, where the surgeon can easily see it by lifting his eyes.

The instrument shows the length of separate steps in the operation and gives the following information about the patient: the depth of anesthesia, the work of the heart, arterial pressure, pulse and respiration rates, and the degree of oxygen saturation of the blood.

All the indications that the instrument controls during the operation are automatically recorded on a roll of special paper. Thus, a "diary of the operation" is obtained, which afterwards may be used for study and demonstration purposes.

59. New Physiological Data Recording Unit

"Six 'Professions' of One Instrument"; Leningrad, Leningradskaya Pravda, 18 Nov 62, p 4

"Up to a dozen different kinds of instruments and apparatus are being used in clinical practice in order to examine the activity of the human cardiovascular system. Each one of them determines either the blood pressure or the pulse rate, percentage of oxygen, etc.

"Designers A. Kreytser and R. Mikhaylov, Engr B. Naruzhnyy, and radio technician R. Os'man of the 'Krasnogvardeyets' plant constructed a complicated medical recording unit, called the physiograph, which takes the place of several instruments. This electronic unit is intended to pick up and record six different physiological processes simultaneously. The physiograph can be utilized both under laboratory and clinical conditions.

"The unit is equipped with a panel, blocks, and an oscilloscope which make it possible for an investigator to observe visually any one of the six physiological processes recorded.

"Following their successful clinical testing, the 'Krasnogvardeyets' plant began series production of the physiograph unit. Work has been completed on the first ten of those units."

60. Microelectrodes Described

"Microelectrodes"; Leningrad, Vechernyy Leningrad, 8 Aug 62,
p 3

"Processes of excitation and inhibition which occur in the cells of the central nervous system are connected with the generation of definite electrical potentials on their surfaces. They are measured with the aid of fine glass pipets filled with a solution which conducts an electric current. The tips of the pipets are almost invisible -- smaller than 0.5 micron. Their diameter can be measured only under an electron microscope.

"The tip of the pipet is negligibly small and does not harm the cell; it carries on its normal work, sending 'information' about its activity through the microelectrode. The signals are amplified many times and are recorded with a highly sensitive apparatus -- a cathode oscillograph. On the screen there appear oscillations according to which the origin of processes in nerve cells of experimental animals can be determined. Different groups of cells in the brain have been found to differ from one another quantitatively. They react differently to the same nerve impulse reaching them from other cells.

"The microelectrode introduced into a nerve cell is used not only for passive recording of what is happening within it, but also for active intervention in the intracellular processes. An electric current passing through a microelectrode can alter the activity of the cell in any direction -- it can either reinforce or inhibit it. Different chemical substances entering the cell can act selectively on definite areas of physicochemical and biochemical processes. Thus, prospects for controlling the activity of a cell in its natural position within the central nervous system are manifested."

61. New Medical Equipment Described

"Two Instruments"; Moscow, Meditsinskiy Rabotnik, 11 Sep 62,
p 1

"The design bureau 'Biofizpribor' in Leningrad has produced, in its experimental factory, the first models of new medical apparatus and instruments. We want to describe two of them.

"The 16-channel electroencephalograph: this is a highly sensitive instrument used in neurological, neurosurgical, and psychiatric clinics. It is intended for precise topical diagnosis of brain injuries; with its assistance, it is possible to determine the localization of tumors and different pathological foci. Investigation of bioelectrical potentials is done by amplifying the biocurrents and recording them on paper tape with an ink stylus. The apparatus is supplied by a 127- or 220-v a-c network.

"The electroencephalograph complex contains: a transducer to record respiration, an attachment to record the skin-galvanic reflex, and also different attachments to be used with the apparatus.

"The cardiocyclograph: cardiocyclography is a new method of recording an electrocardiogram: biocurrents of the heart are recorded according to separate heart cycles.

"The cardiocyclograph designed by 'Biofizpribor' is an electronic instrument used for diagnosing diseases of the cardiovascular system and for studying its physiology.

"Recording is done at a rate of 2-4 mm/sec on photographic paper 100 mm wide. Stepless sensitivity control of the instrument is provided. The cardiocyclograph weighs 60 kg."

62. Biocurrents Recorded With Ordinary Tape Recorder

"Biocurrents -- on a Tape Recorder"; Moscow, Sovetskaya Rossiya, 8 Dec 62, p 4

"An apparatus for recording biocurrents on an ordinary tape recorder has been developed at the Riga Institute of Orthopedics and Traumatology.

"The new apparatus, a small transistorized tape recorder attachment, has many advantages. It can record interesting processes at any time and in any quantity, even at home. Rapid biological processes can be observed slowed down, which is difficult or even impossible with ordinary recordings."

Nuclear Medicine63. Reaction of Peripheral Vessels to Photostimulation Altered in Cyclotron Operators

"The Condition of the Peripheral Vessels in People Working on Cyclotrons," by V. V. Alferova and L. V. Kuznetsova; Moscow, Meditinskaya Radiologiya, Vol 7, No 12, Dec 62, pp 32-37

Simultaneous plethysmographic recordings were taken of the reaction of the peripheral vessels of the hand to photothermal stimulation and of the other hand in a number of people who had been working on a cyclotron for 4-9 years; these figures were compared with control groups who had no occasion to be exposed to ionizing radiations (neutrons, gamma-rays, and beta- and alpha-activity) from cyclotrons).

Results showed that persons working on cyclotrons develop an alerted form of plethysmogram (reactions of narrowing and expansion, size of vascular reaction, duration of reaction, latent period, etc.).

The authors consider these changes (which were stable in many cases) in vessels as protective reactions of the organism and compensatory functions operating to re-establish the organism's disturbed balance in an altered environment.

64. Biologically Active Substances With a Healing Effect on Radiation Sickness

"The Cytophysiological Analysis of the Therapeutic Effect of Some Biologically Active Substances During Acute Experimental Radiation Lesion," by Ye. G. Dolgov, Chair of Roentgenology and Medical Radiology, Semipalatinsk Medical Institute; Moscow, Tsitologiya, Vol 4, No 6, Nov/Dec 62, pp 675-680

A single general irradiation of white rats by gamma-rays in doses of 400 and 800 r is accompanied by a change in the substantial condition of tissue structure, on the basis of which, evidently, lies the change in the natural condition of intracellular proteins. The type of change in the sorption activity of tissues depends on the radiation dose. The use of deoxycorticosterone acetate and of Vitamin B₆ for therapeutic purposes after the effect of gamma-rays equal to 400 and 800 r on experimental animals prevent the change in the sorption properties of tissues, which is evident in experimental acute radiation lesion.

The therapeutic use of the secretion from the cutaneous glands of the toad and of antibiotics exerts a favorable effect on the course of the altered changes in the tissues of irradiated animals; this effect is more pronounced in doses of 400 r.

The results obtained confirm that deoxycorticosterone acetate, Vitamin B₆, the secretion of the cutaneous gland of the toad, and antibiotics which are used as therapeutic agents in cases of acute radiation injury alleviate the injurious action of ionizing radiation on animal organisms.

65. Spleen Transplantations Alleviate Radiation Sickness

"The Treatment of Acute Radiation Sickness by Homotransplantation of Fresh and Preserved Spleen," by V. A. Revis, the Kalinin Medical Institute on the base of Oblast Clinical Hospital; Moscow, Meditinskaya Radiologiya, Vol 7, No 11, Nov 62, pp 65-73

Experiments performed on 50 rabbits subjected to radiation and treated by subcutaneous homotransplantation of fresh and preserved spleen showed the following results:

1. The transplantation of fresh spleen exerts a definite therapeutic effect during acute radiation sickness in rabbits irradiated by a 1,100 r dose; this effect is evidenced by the increased survival of the animals and by the lighter clinical course of radiation sickness.

2. Preservation of spleen by the method of 24-hour freezing at -75° in glycerine media and in TsOLITK-7 (Central Order of Lenin Institute of Blood Transfusion -7) preservatives ensures good storage whereby the tissue structures of the spleen are preserved for up to 45 days.

The preserved spleen retains its protective-biological properties against radiation injuries; the transplantation of spleen preserved for 20 and 45 days greatly increased the survival of the irradiated animals (43 out of 60 animals survived when treated, but only 7 out of 50 animals survived when untreated), and the course of radiation sickness was alleviated in the treated animals.

66. Maturity of Plasma Cells an Index to Immunogenesis

"The Significance of Plasma Cells in the Process of Antibody Formation During Ionizing Radiation," by L. G. Kovtunovich and A. Yu. Rudnitskaya, Odessa Institute; Moscow, Arkhir Patologii, Vol 24, No 12, Dec 62, pp 15-21

Immunological and histological methods were used to study radiation effects on immunization by using 66 white mice immunized with perfringens toxoid or tetravaccine or immunized and x-irradiated by 700 r. The animals were sacrificed on the third or the tenth day after immunization.

Results showed a close relationship between the antibody content of the blood serum and the number and degree of maturity of the plasma cells in the lymph glands, especially in the splenic pulp.

Ionizing radiation action altered the number and the degree of maturity of the plasma cells depending on the type of antigen and the time of its administration with regard to radiation.

The authors conclude that the number and the degree of maturity of plasma cells in lymph glands, especially in the spleen of animals, form a clear morphological index of the antibody formation process which can be successfully used for studying the mechanism of immunogenesis under normal conditions and following ionizing radiation.

67. Altered Glycogen Content Precedes Morphological Cell Changes Caused by Irradiation

"The Cytochemistry of the Blood Glycogen in Mammals Following a Single Total X-Irradiation," by A. L. Shabadash and Yu. B. Kheyfets, Institute of Biological Physics, Academy of Sciences USSR; Moscow, Arkhir Anatomii Gistologii i Embriologii, Vol 43, No 12, Dec 62, pp 29-35

A single general X-ray irradiation of rats by 800 r leads to the depletion of glycogen in the neutrophils and in the thrombocytes as early as 10-30 minutes after the exposure.

The decreased content of glycogen attains its maximum during the 1-3 hours after radiation action against a background of significant leukocytosis and neutrophilosis; unlike the temporary variations in the level of the polysaccharide under normal conditions, the disintegration proceeds unrestrained.

The disintegration of the polysaccharide progresses from the central perinuclear zone to the periphery of the cell; it is accompanied by the swelling of the cytoplasm which indicates the accumulation of acid products of glycogenolysis. The swelling of the neutrophils is complicated by a visible ectoplasmic zone. It is sharply marked within 3 hours after radiation exposure and predisposes to the disintegration of the nucleus and of the cell.

Six hours after irradiation, many disrupted neutrophils containing only traces of glycogen can be observed in the peripheral blood. Twenty-four hours after irradiation action, sharp leukopenia is observed regardless of the appearance of new generations of cells; the neutrophils are characterized by a sufficiently high glycogen content which is close to the normal.

The cytochemical changes in the glycogen level following irradiation precede morphological changes evident in the nucleus and in the cytoplasm of neutrophils.

68. Cerebral Decortication Diminishes Range of Adaptation to Ionizing Radiation

"The Effect of Decortication of the Cerebrum on the Radio-reactivity and Radioresistance of an Organism," by P. V. Simonov, Experimental Laboratory and Pathological Anatomy Department of the Main Military Hospital imeni N. N. Burdenko; Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 54, No 7, Jul 62, pp 33-37

A total of 15 control and 11 decorticated (complete bilateral decortication of the cerebral hemispheres) rabbits were exposed to 100, 400, and 800 r from X-rays, and the physiological functions (duration of hypnosis, number of leukocytes in the blood, and blood system reaction to the administration of a 5% solution of a sodium salt of nucleic acid) were studied.

Results revealed that the decorticated animals were less sensitive to the low dose, but less resistant to the high doses than were the control animals.

The author concludes that cerebral decortication diminishes the range of adaptive possibilities of the body and makes it both less sensitive and less resistant to the action of ionizing radiation.

This research was initiated at the Chair of Normal Physiology, Military Medical Order of Lenin Academy imeni S. M. Kirov.

69. Relationship Between Total Irradiation and Hypophysectomy in Cholesterol Synthesis

"The Significance of the Hypophysics in the Reaction of Accelerated Cholesterol Synthesis in Response to Irradiation," by K. A. Tret'yakova, All-Union Scientific Research Institute of Experimental Endocrinology; Moscow, Biokhimiya, Vol 27, No 5, Sep/Oct 62, pp 801-804

Hypophysectomy and clinical block of the hypophysis by means of deoxycorticosterone inhibit cholesterol synthesis in the liver.

Total X-ray irradiation (800 r) of rats which had been subjected to the blocking of the hypophysis is accompanied by a smaller acceleration in the rate of cholesterol synthesis as compared with the rate observed following the irradiation of intact animals.

The irradiation of hypophysectomized rats did not cause any statistically significant acceleration of cholesterol synthesis during the period following hypophysectomy.

70. Radiation-Induced Injuries to the Gastrointestinal Tract

"Injuries to the Gastrointestinal Tract During Chronic Radiation Sickness Caused by the Repeated Action of X-Rays," by G. A. Lebedeva; Moscow, Arkhiv Patologii, Vol 24, No 12, Dec 62, pp 21-26

Sclerotic changes, disturbances in the neurovascular and lymphatic apparatus, and changes in the cellular composition of the stroma were evident in the stomach and intestine of dogs during chronic radiation sickness and radiation leukemia which were caused by the repeated action of X rays in total doses ranging from 1,540 to 6,915 r.

Besides general disturbances, certain injuries of the gastrointestinal tract and varying degrees of disturbances of morphological changes revealed, evidently, individual characteristics of reaction to radiation action in different animals.

The degree of injury to the various parts of the gastrointestinal tract proved to be unequal: injuries in the stomach were most pronounced.

It was not possible to find a strict relationship between the severity of injury and the magnitude of the radiation dose.

71. Fibrinogen and Fibrinogenase Levels During Radiation Sickness

"The Relationship Between the Increased Concentration of Fibrinogen and the Activity of Fibrinogenase in Dogs During Radiation Sickness," by K. V. Gordeyeva, Military Medical Order of Lenin Academy imeni S. M. Kirov, Leningrad; Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 54, No 11, Nov 62, pp 39-41

Blood plasma concentration of fibrinogen and fibrinogenase activity were studied on dogs subjected to radiation sickness of severe, moderately severe, and mild forms.

Results showed that the fibrinogen content rose during the initial and during the peak periods of severe and moderately severe radiation sickness, and simultaneously with this rise in fibrinogen concentration there was a fall in the fibrinogenase activity.

The author considers the rise in the fibrinogen concentration a compensatory protective reaction against hemorrhage rather than a result of decreased fibrinogenase activity.

72. Cystamine Alters Oxidative Phosphorylation in Spleen of Irradiated Animals

"The Effect of Cystamine on Oxidative Phosphorylation in the Spleen of Irradiated Rats," by V. G. Vladimirov, Military Medical Order of Lenin Academy imeni S. M. Kirov, Leningrad; Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 54, No 11, Nov 62, pp 55-57

The effect of cystamine (75 mg/kg of a one percent neutral solution administered per os immediately prior to irradiation by 600 r) on oxidative phosphorylation in the spleen of irradiated white rats was studied.

Results showed that the prophylactic administration of cystamine decreases the changes in oxidative phosphorylation occurring in the spleen of the irradiated rats.

73. Healing of Closed Fractures During Radiation Sickness

"The Healing of Closed Fractures in Experimental Animals During Radiation Sickness (Preliminary Report)," by A. B. Russakov; Moscow, Ortopediya Travmatologiya i Protezirovaniye, Vol 23, No 12, Dec 62, pp 47-50

The external general irradiation of rabbits by small fractionated doses (of 20 r daily up to a total of 1,200 r) causes chronic radiation sickness of medium severity.

Callus formation in closed fractures is delayed during the first 8-12 days of chronic radiation sickness which is caused by external radiation; but later, the reconstruction of calluses proceeds more actively in the animals that were exposed to irradiation.

74. Effect of Vitamins on Irradiated Animals

"On the Biochemical Analysis of the Action of Streptomycin and Its Complex With Thiamine and Riboflavin on a Background of Radiation Sickness in Animals," by Ya. Dachulite, Tr. 1-y Biokhim. Konferentsii Pribaltiysk. Resp. i Belorussii Posvyashch. 20-letiyu Latv. Lit. Est Sov. Sots. Resp. (Works of the First Biochemical Conference of the Baltic Republics and Belorussia Dedicated to the 20th Anniversary of the Latvian, Lithuanian, and Estonian Republics), 1960, Tartu, 1961, pp 428-434 (from Referativnyy Zhurnal -- Biologiya, No 22, Nov 62, Abstract No 22 T217, by V. Shashkov)

"Thiamine (2 milligrams per kilogram body weight), riboflavin (0.25 milligram per kilogram body weight), and their complex with streptomycin (500 units per day subcutaneously) were intraperitoneally administered for a period of 10 days to mice irradiated with X rays (dose of 450 r). On the 10th day following the irradiation, the activities of catalase and carbonic anhydrase decreased, respectively, by 38.3 and 38.5 percent. The administration of the vitamins, their combination, and their complex with streptomycin failed to restore the activity of the enzymes. The administration of the streptomycin increased the longevity of the animals after their irradiation; the administration of streptomycin in combination with the vitamins increased the mortality rate of the mice."

Nutrition75. Special Individual Parcels of Pastelike Daily Ration Described

"Physiological and Hygienic Evaluation of a Ration For Individual Use, Developed by TsNIIKOP [Tsentral'nyy Nauchno-Issledovatel'skiy Institut Konservnoy i Ovoshchnoy Promyshlennosti, Central Scientific-Research Institute of the Canning and Vegetable Industry];" by I. D. Yertanov, Laboratory for Study of Special Diets, Institute of Nutrition, Academy of Medical Sciences USSR, Moscow; Moscow, Voprosy Pitaniya, Vol. 21, No 5, Sep/Oct 62, pp 71-75

This report presents a physiological and hygienic evaluation of a daily ration of food in pastelike form. Containing three individually wrapped packs for breakfast, lunch, and dinner, each parcel has a gross weight of 1,820 grams. The assimilation rate of each daily ration was found to be 90.3%. It contains 79.4% protein, 92.3% fats, 91.2% carbohydrates, and 81.5% mineral salts. Its nitrogen balance was found to be positive. Experimental subjects did not become tired of the diet after consuming the ration for 8 days. No disorders in the gastrointestinal tract were apparent in people consuming the pastelike rations.

The parcel containing the ration is easy to carry and is recommended for tourists and members of various expeditions.

Oncology76. p³² As an Aid in the Diagnosis of Gastric Cancer

"Application of Radioactive Phosphorus for the Diagnosis of Gastric Cancer," by Ye. I. Voznyuk and B. D. Komarov, Chair of the Faculty Surgery of the Therapeutic Faculty and Chair of Roentgenology and Radiology, Second Moscow Medical Institute imeni N. P. Pirogov; Moscow, Khirurgiya, Vol 38, No 12, Dec 62, pp 60-62

Radioactive phosphorus was administered to a number of persons, some of whom were suspected of being afflicted with cancer of the stomach. An examination of the lavage fluids of the stomachs of these persons revealed that the fluids obtained from those suffering from gastric cancer were more radioactive than the fluids obtained from patients suffering from other diseases. The presence of more than one percent of radioactive phosphorus in lavage fluids of the stomach was, therefore, accepted as a symptom of the presence of a gastric tumor. This method of diagnosis, however, was found to be inadequate in cases of gastric tumors with metastases, for in these cases the quantity of radioactive phosphorus in the lavage fluids is diminished.

77. Cancer Detection Apparatus Announced

"Apparatus for Early Detection of Cancer" Warsaw, Zycie Warszawy, 5 Dec 62, p 5

The Electromedical Apparatus Research Laboratory (Zaklad Aparatow Elektromedycznych) of the Warsaw Polytechnic has developed a new piece of electronic equipment, called the sine- and statidensigraph. This apparatus, designed by Prof Stanislaw Nowosielski, facilitates the early detection of lung cancer.

78. Theory of the Viral Etiology of Cancer

"Viruses and the Etiology of Cancer," by L. A. Zil'ber, Active Member of the Academy of Medical Sciences USSR; Moscow, Priroda, Vol 51, No 11, Nov 62, pp 33-40

The various aspects of the theory of the viral origin of cancer are discussed by the author in the article. A review of world literature on oncology, he writes, brings to light one well-established fact: all spontaneous tumors in animals, if studied by virological

methods, can be identified as being of viral origin. He groups all the cancerogenic viruses into a single family, that of Tumoriferaceae. The four genera of this family are as follows: Tumoroides, viruses which induce tumorlike processes; Papillomiferus, viruses which induce the development of papillomas; Leucosoferus, viruses which are thought to be the causative agents of leukoses; and Tumoriferus, viruses which cause the development malignant tumors.

The most interesting and important facet of the theory that viruses are the causative agents of cancer is that of the mechanism of the action of the viruses on the cells. The process of the cancerogenic action of the viruses falls into two phases: the first is that of the transformation of the normal into a pathological cell induced by the viruses; in the second phase, the tumor process continues without the participation of the virus. In speaking of the mechanism of the process by which normal cells are transformed into tumor cells, the author admits that here he is not on terra firma and must resort to assumptions, analogies, and comparisons. As yet there is no unanimity of opinion with regard to this problem.

The author then proceeds to discuss the possible various ways the viruses enter the organism and their infectious effect on the normal cells.

As yet, he writes, all the information available on the viral theory of the origin of cancer has been obtained through the study of tumors obtained from animals. All attempts to isolate viruses and their nucleic acids from man have been unsuccessful and failed to provide undisputable proof of the viral etiology of cancer. There is no reason to think, however, that the process of the development of tumors in man radically differs from that in animals.

79. Effect of N, N'-Diacetylbenzidine on the Organism

"Characteristics of the Cancerogenic Action of N,N'-Diacetylbenzidine," by G. B. Pliss, Laboratory of Experimental Oncology, Institute of Oncology, Academy of Medical Sciences USSR; Leningrad, Vorposy Onkologii, Vol 8, No 11, Nov 62, pp 11-15

Forty rats 110 to 140 grams in weight were used in the experiments which were conducted in order to determine the cancerogenic properties of N,N'-diacetylbenzidine, a substance synthesized at the Scientific-Research Institute of Organic Semiproducts and Dyes. The substance in the form of a 6-percent suspension in sunflower oil was subcutaneously injected to the animals. During the 9 months of the experiments, the animals received a total of 870 milligrams of the

substance each. Of considerable interest was the difference in the reaction to the substance between the male and female rats. Male animals only remain alive by the 10th month of the experiment. These animals developed hepatoma and carcinoma. The experiments established that N,N'-diacetylbenzidine was moderately cancerogenic: neoplasms developed in 46 percent of the animals. In addition, lesions of the renal organs of a nephrosis type were developed by the animals.

80. Effect of Some Pyrimidine Compounds on Ehrlich's Tumor

"Effect of 4-Oxo-6-Iminopyrimidine-2,1,3-Thiodiazole and Its Combinations With Certain Other Antitumorous Preparations on the Growth of Ehrlich's Tumor," by T. F. Guseva, N. I. Vol'fson, and L. V. Zolotova, Tr. Leningr. Khim. Farmatsevt. I-ta, (Works of the Leningrad Chemicopharmaceutical Institute) 1961, No 13, pp 142-149 (from Referativnyy Zhurnal -- Biologiya, No 21 Nov 62 Abstract No 21 R98, by Yu. Sorkina)

"The antitumorous action of 4,6-dioxypyrimidine (I), 4-oxo-6-thiopyrimidine, 4,6-dioxo-7-methylpyrimidine, 4,6-dioxo-5,7-dimethylpyrimidine, and 4-oxo-6-iminopyrimidine-2,1,3-thiodiazole and the combination of (I) (the more active) with the cultural fluid of actinomyces strain 26/I of the group of globular spores (II), omain (III), cortisone (IV), novoembichin (V), and sarcolysin (VI), was studied in mice subcutaneously inoculated with Ehrlich's tumor. The preparations were administered intraperitoneally to the animals once each day for periods of 7 to 17 days following the inoculation. Seven daily injections were carried out in the experiments in which the combination of preparations was used. The most significant depression of the development of the tumor was noted when (I) was applied (in 30 to 40 percent of the cases when doses of one milligram were applied, and in 60 percent of the cases when doses of 2 milligrams were used). The combination of (I) (one milligram) with (II) and (III) inhibited the growth of the tumor in 60 percent of the cases; combinations of (I) and (III) or (I) and (II) -- in 40 to 48 percent of the cases; and combinations of (I) and (IV) and (V) and (VI) -- in 30 percent of the cases and less."

81. Combinations of 6-Mercaptopurine With Hormones and Hemotransfusion in the Therapy of Leukoses

"Therapy of Acute Leukoses With 6-Mercapto purine," by T. L. Andzhaparidze, N. I. In-t Perelivaniya Krovi Gruz. SSR (Institute of Blood Transfusion, Georgia SSR), 1961, 7, pp 131-137 (from Referativnyy Zhurnal -- Biologiya, No 21, Nov 62, Avstract No 21 R110)

"6-Mercaptopuring (I), in combination with hormones and hemotransfusions, has been found to be the most effective preparation in the therapy of acute leukosis. As compared with other methods of therapy (I) produces a more lasting remission, increases the longevity of the patients; it is particularly effective when administered to children. Anemia, leukopenia, and thrombocytopenia do not contraindicate the application of (I), is the author's opinion. Application of (I) must be carried out under the control of blood analyses."

82. Effect of Some Antibiotics on the Cells of Ehrlich's Carcinoma

"Morphological Analysis of the Effect of the Antibiotics Olivomycin and Krutsin on the Cells of the Ascitic Form of Ehrlich's Tumor," by V. I. Boyko, Laboratory of New Antibiotics at the Chair of Microbiology, Central Institute for the Advanced Training of Physicians; Moscow, Antibiotiki, Vol 7, No 12, Dec 62, pp 1085-1090

Investigations were conducted in vitro in order to determine the effect of olivomycin, and antibiotic isolated from *Actinomyces olivoreticuli*, and krutsin, an antibiotic derived from *Schizotrypanum cruzi*, on the cells of Ehrlich's tumor. The investigations established that olivomycin, even in large doses, causes no modifications of the cells of ascitic forms of Ehrlich's carcinoma; only an expressed dilation of the endoplasmatic system was noted. Krutsin in large doses modified the structure of some parts of the cells; these changes were marked mainly by lesions of the mitochondria and the redistribution of and decreased in content of ribonucleic proteides. These modifications, to some degree, differ from those caused by the action of other actinomycete antibiotics.

83. Effect of Antibiotic M-770 on Tumors

"Antitumorous Action and Toxicity of Antibiotic M-770," by L. Ye. Gol'dberg, V. A. Iyashenko, M. S. Stanislavskaya, V. S. Muraveyskaya, V. Ye. Kremer, S. T. Filippos'yan, and G. N. Lepeshkina, Laboratory for the Experimental Investi-

gation of the Therapeutic Properties of New Antibiotics, Institute for the Search of New Antibiotics, Academy of Medical Sciences USSR; Moscow, Antibiotiki, Vol 7, No 11, Nov 62, pp 971-974

Mice were used in the experiments which were conducted to determine the toxicity of the antibiotic. The LD₁₀₀ of M-770 was found to be 500 milligrams per kilogram body weight when administered subcutaneously. The antitumorous action of M-770 was established by the daily administration of the preparation in doses of 20 milligrams per kilogram body weight to mice previously inoculated with Ehrlich's adenocarcinoma, Crocker's sarcoma, and LIO-1 lymphosarcoma. Therapy was initiated on the third day following the inoculation. The experiments established that antibiotic M-770 in doses close to toxic exhibits an antitumorous effect, whether administered subcutaneously or per os. A histological examination of the organs of animals which were administered M-770 in doses of 30 to 40 milligrams per kilogram body weight disclosed lesions of the kidneys, liver, spleen, and fundic glands of the stomach. There was also a considerable increase in the general lipids of the liver. The combined application of M-770 and methionine reduced somewhat the level of lipids of the liver, without a decline, however, in the mortality rate of the animals.

84. Electron Microscope Reveals Early Changes Produced in Mitochondria by Ultrasound

"Submicroscopic Changes in Cells of Brown-Pearce Tumor Under the Effect of High Intensity Ultrasound," by M. T. Dmitriyeva, Laboratory of Cytology Institute of Animal Morphology, Academy of Sciences USSR; Moscow Tsitologiya, Vol 4, No 5, Sep/Oct 62, pp 559-562

Sharp submicroscopic changes not detected by optical microscopy are evident through electron microscopic studies of Brown-Pearce tumor cells subjected to high intensity ultrasound.

Submicroscopic changes in the sound-treated tumor cells in the beginning appear as sharp changes in the mitochondria (swelling, disruption of crystals, disruption of membrane), in the swelling of the ergastoplasmatic network, and in the decreased number of Palade granules both in its membrane and in the plasma. The number of lipid granules is increased. Later on, changes arise in the nucleus also: vacuoles, appear filariodea components of the nuclear content increase, and the nuclear membrane is dissolved.

The very fine changes which arise in the Brown-Pearce tumor cells after the tumors are exposed to high-intensity ultrasound are, in the majority of cases, irreversible and lead finally to the death of the tumor cells.

Pharmaceuticals and Biologicals

85. Ridinol, Cholinolytic Preparation

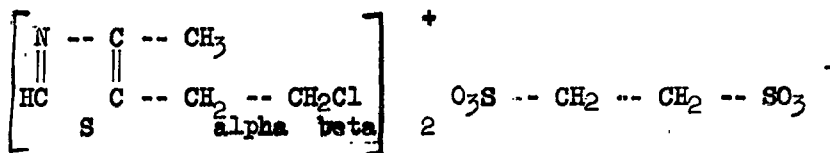
"Ridinol"; Moscow, Meditsinskaya Gazeta, 25 Dec 62, p 3

Ridinol was prepared at Leningrad Chemicopharmaceutical Plant No 1. It is a white fine crystalline powder, poorly soluble in water and alcohol. Ridinol, a cholinolytic preparation, is used in the therapy of Parkinson's and other diseases of the extrapyramidal system accompanied by a rise in muscular tonus and hyperkinesia. The maximal daily dose of ridinol for adults is 30 milligrams. Ridinol is supplied in the form of tablets, each containing one milligram of the preparation.

86. Hemithiamine, New Somnifacient Preparation

"Chemical and Pharmacological Investigation of Hemithiamine, A New Somnifacient Preparation," by V. L. Vanevskiy, A. D. Panashchenko, T. G. Yershova, I. Kh. Fel'dman, and G. M. Heyfits, Chair of Thoracic Surgery and Anesthesiology, Leningrad State Order of Lenin Institute for the Advanced Training of Physicians imeni S. M. Kirov and Chair of the Chemistry and Technology of Medicinal Preparations, Leningrad Chemicopharmaceutical Institute; Moscow, Farmakologiya i Toksikologiya, Vol 25, No 6, Nov/Dec 62, pp 657-661

Hemithiamine, the ethansulfonate of 4-methyl-5-beta-chloroethylthiazole, was synthesized at the Leningrad Chemicopharmaceutical Institute by I. Kh. Fel'dman and G. M. Heyfits. Its structural formula is as follows:



Hemithiamine is in the form of colorless crystals having a melting point of 125 degrees. It is readily soluble in water and alcohol. Its aqueous solutions have a pH of 1.9; it readily gives off its chloride, becoming the ethansulfonate of 4-methyl-5-beta ethoxythiazole.

Mice, rats, and rabbits were used in experiments which established that hemithiamine acts as a somnifacient and sedative; it is not toxic and produces no side reactions. The investigation of its possible use as a tranquilizer is urged.

87. Cobro-Toxin, Preparation Obtained From Cobra

"An Unusual Farm," by Iosif Sigalov; Riga, Sovetskaya Latvija, 21 Aug 62, p 4

Cobro-toxin is a preparation obtained from the cobra. It is used for the therapy of asthma and nervous diseases at the Tashkent Clinical Hospital. The venom is obtained from a snake farm of the Institute of Zoology and Parasitology of the Academy of Sciences Uzbek SSR.

88. Ethoxyd, New Antitubercular Preparation

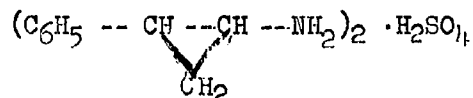
"Ethoxyd"; Moscow, Meditstnaskaya Gazeta, 13 Nov 62, p 3

Ethoxyd is a white crystalline powder readily soluble in acetone and hot alcohol. It is indicated for use in the therapy of different forms of tuberculosis. Therapy with ethoxyd begins with a daily dose of 0.25 gram, which is gradually increased to one gram. There are no contraindications to the use of the preparation. A cutaneous allergic type of reaction develops on occasion. Then, either the dose of ethoxyd should be reduced or the administration of the drug should be temporarily discontinued. It is primarily used as a supplement to phthivazid and streptomycin.

89. Effectiveness of Transamine Therapy of Depressed Conditions

"Data on the Experimental and Clinical Investigation of the New Monoaminoxidase Inhibitor Transamine," by V. Ya. Grinshteyn, N. S. Ratenberg, and T. N. Morozova, Institute of Organic Chemistry, Academy of Sciences Latvian SSR, and Chair of Psychiatry Central Institute for the Advanced Training of Physicians; Moscow, Zhurnal Nevropatologii i Psikiatri imeni S. S. Korsakov, Vol 62, No 12, Dec 62, pp 1806-1812

Transamine was synthesized at the Institute of Organic Synthesis of the Academy of Sciences Latvian SSR. Chemically it is the sulfate of trans-2-phenylcyclopropylamine. Its formula is as follows:



Transamine is a white crystalline powder, bitter in taste; it melts and decomposes at a temperature of 216 to 220 degrees. It readily dissolves in water, dissolves poorly in ethyl and methyl alcohols, and is practically insoluble in ether and benzene.

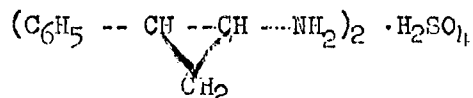
Transamine was administered to 34 patients suffering from different types of depression: 12 suffering from maniac-depressive psychoses and cyclothymia, 17 from schizophrenia in various forms, one from reactive depression, one from depression attacks on a background of traumatic encephalopathy, and two from depression caused by aminazine therapy. In all cases it was apparent that transamine is an effective antidepressant; it has low toxicity and is well tolerated by the patients. In some cases its application in combination with aminazine and stelazine is advisable.

90. Effect of Hippophaine on Organism

"Experimental Data on the Pharmacology of Hippophaine (5-oxytryptamine hydrochloride)," by A. P. Belikova, N. A. Kudryavina, Yu. I. Rampan, and A. B. Syrkin, Laboratory of Pharmacology, Institute of Experimental and Clinical Oncology, Academy of Medical Sciences USSR; Moscow, Farmakologiya i Toksikologiya, Vol 25, No 6, Nov-Dec 62, pp 705-711.

Hippophaine (5-oxytryptamine hydrochloride) is a grayish-white powder isolated from the bark of *Hippophae rhamnoides*. It dissolves readily in water and physiological solution; its melting point is 162-163 degrees. When intravenously administered to rabbits and cats in doses of 5 milligrams per kilogram body weight it decreased arterial pressure; in doses of 5-15 milligrams per kilogram body weight it arrested diuresis in rats. The administration of hippophaine to rats prior to the administration of barbamyd or nembutal prevented the development of sleep. When administered to mice it potentiated the action of the somnifacient drugs. The intraperitoneal administration of hippophaine to rats in a dose of 20 milligrams per kilogram body weight diminished the toxicity of dopan administered in a dose of 5 milligrams per kilogram body weight per os. It has been found to be active in depressing the growth of some experimental tumors.

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91. Phenatine, Mild Stimulant and Hypotensive

"A Stimulating Preparation," by Vladimir Shepilevich;
Leninskoye Znamya, No 281, 1 Dec 62, p 3

Phenatine, a stimulant, was produced by Prof Sergey Arbuzov of the Chair of Pharmacology at the Military-Medical Order of Lenin Academy imeni S.Kirov. The preparation is the product of the condensation of phenamine with nicotinic acid. It acts as a mild stimulant and simultaneously reduces blood pressure. Pyridoxiphen, a product of condensation of phenamine and pyrodoxin, was also prepared by members of the Chair of Pharmacology of the Academy. It is clinically applied in the therapy of nervous disorders.

92. Framycin Sulfate, Antibiotic of Neomycin Order

"Framycin Sulfate," by Pharmacist V. Kucherenko; Moscow,
Meditsinskiy Rabotnik, 9 Oct 62, p 3

Neomycin, an antibiotic of the neomycin order, has a broad spectrum of action. It inhibits the development of gram-positive and gram-negative bacteria. It has no effect on fungi, viruses, and anaerobic flora. It is used internally in the therapy of intestinal disorders. Framycin sulfate is also applied externally in the therapy of wounds and suppurative processes. While normally well tolerated by patients, it should be administered with caution to patients afflicted with functional renal disorders and diseases of the auditory nerve. It should not be administered in combination with streptomycin, dihydrostreptomycin, colimycin, monomycin, micerin, and biomycin. Framycin sulfate is supplied in the form of tablets, each containing from 125,000 to 250,000 units of the antibiotic.

93. Aminoquinol, Preparation for Therapy of Some Infections

"Aminoquinol"; Moscow, Meditsinskaya Gazeta, 13 Nov 62, p 3

Aminoquinol, a preparation used in the therapy of protozoal infections and lamblasis, was synthesized at the All-Union Chemicopharmaceutical Institute imeni S. Ordzhonikidze. Two therapy cycles of 5 days each at intervals of 4-7 days are recommended for the application of aminoquinol. Side reactions of a cutaneous-allergic type occur on occasion, but disappear when the administration of the drug is suspended.

94. Effect of Antibiotics on Organism in Combination With Cholinomimetics

"Action of Antibiotics in Combination With Cholinomimetic Substances," by S. P. Zakrivdoroga and I. I. Rybas, Chair of Pharmacology Chernovitsy Medical Institute; Kiev, Vrachebnoye Delo, Vol 44, No 12, Dec 62, pp 87-90

Results of experiments which were conducted to determine the pharmacological, toxicological, and antimicrobial properties of the antibiotics penicillin, streptomycin, and chlortetracycline when used in combination with the cholinomimetics acetylcholine, carbocholine, pilocarpine, arecoline, furamon, eserine, and proserine are reported in the article. Tests of the toxicity of each of the substances separately and when in combination were conducted. It was established that in combination the substances tested neutralized the toxicity of each other and that the administration of their combinations presented no danger to the organism.

Pharmacological investigations established that under the influence of the combinations of the substances, tissues consumed greater quantities of oxygen than when under the influence of each of the substances administered separately.

The antimicrobial properties of the substances under investigation exhibited but slight modification when used in combination.

95. Syncumar, New Anticoagulant

"Syncumar," by O. K. Pogrebnyak; Kiev, Farmatsevtichniy Zhurnal, Vol 17, No 3, 1962, pp 92-93

Syncumar, a synthetic anticoagulant, is recommended for use in the therapy and prophylaxis of diseases which accompany thrombopoiesis and thromboembolism. The preparation is not toxic, and does not accumulate in the organism; no side-reactions were noted as a result of its application. The dose to be used in the therapy or prophylaxis of the diseases varies. Because of the potency of the drug, however, the initial dosage must be gradually reduced. The prothrombin time must be carefully checked during the administration of the drug. Contraindications to its application are diseases of the gastrointestinal tract, hepatic and renal disorders, blood affections, and bacterial endocarditis. It is supplied in tablet form.

96. Bee's Milk as Medicine

"Curing With Bee's Milk"; Budapest, Nepszeru Technika, Vol 11, Vol 11, No 9, inside front cover

In Czechoslovakia, an exceptionally effective medication has been prepared from the secretion of 4-12-day-old bees. The medication increases the hemoglobin and red corpuscles in the blood. At the clinic in Kosice, the medication has proved most effective in the treatment of asthma, arteriosclerosis, and other diseases. In many cases, symptoms disappear altogether after treatment.

97. Tasks Confronting Contemporary Pharmacy

"Basic Scientific Problems in the Field of Pharmacy," by A. K. Mel'nichenko, M. G. Koroleva, A. A. Kuz'mina, and S. V. Shanina; Moscow, Aptechnoye Delo, Vol 11, No 5, Sep-Oct 62, pp 3-9

The Commission for the Coordination of Research Work in the Field of Pharmacy recommends that research activities during 1963-1964 in the main be concentrated on the solution of the following problems:

a. Investigation of Medicinal Flora of USSR

The tasks in connection with this problem are: (1) study of wild-growing plants; (2) cultivation of new medicinal plants, increase in the yield of plants now in use, mechanization of their processing, and improvement of the drugs prepared; (3) pharmacognostic investigations; and (4) search for medicinal plants that can be used for the prophylaxis and therapy of neoplasms, cardiovascular diseases, and infectious affections.

b. Development and Improvement of Methods of Preparation of Medicinal Forms and Galenic Preparations

The basic tasks are: (1) search for new and improvement of known medicinal forms; (2) application of high-molecular compounds in pharmacy; (3) derivation of medicinal preparations from plants and study of the process of their extraction; (4) study of prescriptions and incompatibility of drugs; and (5) mechanization of production processes.

c. Development of New Methods of Investigation of Medicinal Substances and Improvement and Unification of Those Now in Use

The basic tasks of this problem are: (1) search for new methods of qualitative and quantitative analysis; (2) investigation and practical application of physicochemical methods in pharmaceutical analysis; (3) search and improvement of chemical and physicochemical methods of analysis of biologically active compounds, cardiac drugs primarily; (4) study of methods of preservation of drugs and the effect of high-molecular compounds on drugs; (5) investigation, development, and practical application of forensic chemical analysis; and (6) development and improvement of methods of isolation, discovery, and identification of heavy metal and arsenic compounds.

d. Organizational and Economic Investigations

Included are: (1) theory and history of pharmacy; (2) scientific bases of the organization of the supply of medicinal preparations to the people; and (3) planning and accounting in pharmaceutical establishments with the use of computer machines.

e. Biological Standardization of Cardiac Drugs

Research activities in connection with this problem should be concentrated on: (1) broadening of investigations of the biological activity drugs, cardiovascular and sedative drugs in particular; (2) study of the biological activity of medicinal preparations; and (3) development of new standards for digitalis and convallaria preparations.

98. Drugs Dispensed by Automatic Machines

"Investigation of the Possibility of Dispensing Certain Drugs by Means of Automatic Machines," by Ye. I. Panchenko and V. L. Tarsis, Central Pharmaceutical Scientific Research Institute, Ministry of Health USSR, and Special Design and Technological Bureau, Moscow Oblast Sovnarkhoz; Moscow, Apteknoye Delo, Vol 11, No 5, Sep-Oct 62, pp 25-29

Several types of automatic machines for the dispensing of certain drugs selected by the Central Pharmaceutical Scientific Research Institute and the Special Design and Technological Bureau of the Moscow Soviet Sovnarkhoz have been designed. The drugs selected include such commonly used preparations as aspirin, analgin, pyrimadon, vitamin B₁ with sugar, phenacetine, urotropin, and others.

99. Mechanized Plant in Latvian SSR to Produce Vitamin B₁₂

"A Miraculous Preparation"; Riga, Sovetskaya Latvya,
4 Jan 63, p 4

Construction of a mechanized plant for the production of vitamin B₁₂ has begun at the Kalkunsk alcohol plant (Daugavpilsskiy rayon). It will be the first such plant in the republic.

It will produce 65 kilograms annually, enough for the addition of vitamins to 1.3-1.5 million tons of fodder. The plant will supply the needs of all Latvian kolkhozes and sovkhozes for this preparation.

Physiology

100. Effect of UHF Electromagnetic Waves on Cortical Excitation

"The Change of Corticoelectrical Activity in the Rabbit Brain Under the Effect of an Electromagnetic Field of UHF," Report No 1, "The Effect of a UHF Field on the Electroencephalogram of Intact Rabbits," by Yu. A. Kholodov and Z. A. Yanson; Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 54, No 11, Nov 62, pp 8-11

Results of experiments on 40 rabbits exposed to a UHF-2m-40 generator showed that during a 3-minute action of a UHF field there was an increase in amplitude and a decrease in frequency of the bioelectric current in the EEG in 47 percent of the cases when the intensity was 1000 V/m, and the same EEG reactions appeared in 80 percent of the cases when the intensity was 5000 V/m.

The majority of the reactions had a latent period of 40 seconds (less frequently the latent period was 87 seconds) and the after-effect lasted for 10-15 minutes. The excitation of the cortical end of the visual analysors rose during the action of the weak UHF field.

101. Changes in Sensitivity of Blood Vessels to Adrenalin and Testosterone During Oxygen Starvation

101. Changes in Sensitivity of Blood Vessels to Adrenalin and Acetylcholine During Oxygen Starvation

"On Certain Changes in the Reactivity of the Cardiovascular System During Oxygen Starvation," by Ye. A. Markova (Ternopol'), Chair of Pathologic Physiology, Ternopol' Medical Institute; Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 6, No 5, Sep/Oct 62, pp 70-71

Sufficiently persistent changes in the sensitivity of blood vessels to small doses to adrenalin and acetylcholine occur in animals experiencing oxygen starvation in one form or another. A decrease in the pressor effect of adrenalin is thought to be due to acidosis that develops during asphyxia. Changes in sensitivity to acetylcholine seems to depend on certain, not yet known, disturbances in the blood and tissue chemistry.

The above observations were made as result of five series of experiments conducted on 80 cats and rabbits.

102. Gradual Adaptation of Organism to Increasing Effect of Environmental Factors

"Is a Skeptical Attitude Toward Climatotherapy Justified?" by G. Hentschel; Deutsches Gesundheitswesen, 1962, No 2, pp 71-77 (from Meditsinskiy Referativnyy Zhurnal -- Section 1, "Kurortologiya, Fizioterapiya i Lechebnaya Fizikul'tura," No 5, May 62, Abstract No 2598, by Yu. Ye. Blok)

"Attempts have been made to explain the skeptical attitude toward climatotherapy, in some medical circles, by the absence of an adequate scientific basis for this method of treatment. Climatotherapy, however, is based on a solid scientific foundation, although many problems particularly in meteoropathology, are still present and require solution. A course of climatic treatment consists of the regulated exposure of a human organism to climatic conditions such as temperature, humidity, air, movement, thermal irradiation, illumination, ultraviolet radiation, partial pressure of oxygen, and the action of aerosols. The physiological significance of these factors consists of the possibility of gradual adaptation of the organism to their increasing action. It is essential to determine the reaction of an organism to effects of temperature. The task of climatic therapy is control of processes of vital activity in such a manner that side reactions produced by the action of environmental factors will be reduced to the minimum."

103. Meteorological Factors Peculiar to Far North Contribute to Development of Myocardial Infarction

"On Myocardial Infarction Under Conditions of the Far North," by O. A. Kuvaldina and G. G. Alekseyeva, Therapeutic Department of the Murmanskaya Oblast Hospital; Sovetskaya Meditsina, No 9, Sep 62, pp 96,100

The authors state in this article that the statistical data issued by the Murmanskaya Oblast Hospital shows that the incidence of myocardial infarction in Murmanskaya Oblast is 0.38 per 1,000 adult population. This figure only slightly exceeds that of any homophyletic city population of the RSFSR. The preponderance of younger adults in Murmanskaya Oblast must be taken into consideration, however, when evaluating possible effects of climatic conditions peculiar to far northern regions.

Myocardial infarction was prevalent in people who had lived in regions of the far north less than one year because adaptation to new conditions increases demands on the nervous system of the human organism. The prevalence of myocardial infarction in people who had lived in regions of the far north more than 20 years is due to the gradual accumulation of unfavorable influences in relatively acclimated residents.

A rise in the incidence of myocardial infarction during autumn and winter months reflects the typical seasonal nature of that disease. An increase in the number of myocardial infarction patients, as well as deaths from acute coronary insufficiency, during the spring months may possibly be due to conditions peculiar to regions of the far north.

104. Physiological Shifts in People Establishing Residence in High Mountain Areas

"Some Physiological Characteristics in People Living in Areas High Above the Sea Level," by G. I. Kravchuk, Chair of Normal Physiology, Tadzhik Medical Institute imeni Abul Ibn Sino; Dushanbe, Zdravookhraneniye Tadzhikistana, No 3, May/Jun 62, pp 26-28

A reduction of vital lung capacity, a reduction in oxygen saturation of arterial blood, an increase in muscular energy expenditure, and a decrease in the time required to perform work take place during the first few days in people moving from lowlands to areas 4,200 meters above sea level. At 3,600 meters above sea level, the basic capacity of people coming from lowlands remains substantially unchanged. These conclusions were reached by the author of this article, who was a member of this article, who was a member of an expedition to Eastern Pamir. The altitude of Eastern Pamir is between 3,600 and 4,200 meters above sea level. Members of the expedition also recorded the physiological differences in people living in Eastern Pamir different lengths of time.

105. Timely and Proper Treatment of Decompression Disease in Dogs

"On the Cause and Prophylaxis of Osteoarticular Distress During Decompression (Caisson) Disease," by V. A. Aver'yanov and P. M. Mikhaylov (Leningrad), Military Medical Order of the Leningrad Academy of Sciences, imeni S. M. Kirov; Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 10, Oct 62, pp 25-30

Analysis of data found in the literature and results of the authors' roentgenological and anatomicopathological investigation showed that changes in the osteoarticular system of divers are the result of inaccurate and belated treatment of decompression disease. No evidence of either roentgenological or pathologicoanatomic changes in the osteoarticular system can be noted subsequently if proper prophylactic measures are taken immediately, the number of exposures to decompression disease notwithstanding.

The investigation discussed was conducted on light male dogs 3-9 years of age, weighing 15-30 kilograms.

106. Conditioning May Increase Tolerance of Rats to Deep Hypoxic-Hypercapnic Hypothermia

"Conditioning Schedule and Some Indicators of Capacity of Rats To Be Conditioned to Deep Hypoxic-Hypercapnic Hypothermia," by N. V. Korostovtseva, Laboratory of Experimental Pathology, Institute of Blood Transfusion, Leningrad; Moscow, Fiziologicheskiy Zhurnal SSR imeni I. M. Sechenova, Vol 48, No 12, Dec 62, pp 1466-1470

Results of 105 experiments on rats showed that it is possible to condition rats to deep hypoxic-hypercapnic hypothermia. Individual differences in metabolism among rats makes it difficult to select a systematic course of conditioning, however. Thrice repeated exposure to conditioning on alternate days was found to produce the best results.

The ability of rats to tolerate hypothermia increases simultaneously with an increase in the intensity of metabolic processes in their organisms and with a decrease in sensitivity to hypoxia. Consumption of oxygen, changes in the body temperature in response to cold, and sensitivity to the organism to oxygen insufficiency may indicate readiness of rats to tolerate artificially created deep hypothermia.

Psychology

107. Soviet Scientist Explains Phenomenon of Woman Who Reads With Fingers

"The 'Second' Sight of Roza Kuleshova"; Moscow, Leninskoye Znamya, 14 Dec 62, p 4

This article discusses the phenomenon of Roza Kuleshova, the woman who is able to "see" with her fingers well enough to read printed texts and distinguish color while blindfolded.

Honored scientist Prof D. G. Shefer, neurologist, explains Roza's phenomenal ability to "see" with her fingers by an unusually developed connection between the optic and cutaneous centers of the brain, which has been strengthened by constant practice. She "sees" not so much with her fingers as with her brain. The nerve endings of the skin, receiving stimuli, transmit these to the cutaneous analyzer of the cerebral cortex. Here the optic analyzer enters the process of decoding. As the scientists mentioned, in Rosa's case there is a sharply pronounced form of intercenter relationships in the cerebral cortex.

The practical significance of this phenomenon is very great. The possibility of developing a "second" sight is especially important for those who cannot see. Sverdlovsk physiologist S. N. Dobronravov has decided to conduct experiments to develop habits of "seeing" with the help of touch in other people.

Public Health

108. Results of Detailed Study of Medical Service to Rural Population in Belorussia

"General Morbidity of the Rural Population," by N. P. Belyy (Vitebsk), Organization and Methods Office of the Vitebskaya Oblast Clinical Hospital; Moscow, Sovetskoye Zdravookhraneniye, No 12, 1962, pp 12-16

The author discusses in this report the results of a survey of morbidity among the rural population of the Belorussian SSR. This survey ordered by the Ministry of Health USSR, was conducted in 1959. A study of the morbidity rate in many cities of the USSR, including 11 cities of the Belorussian SSR, was completed in 1958. Tolochinskiy Rayon, Vitebskaya Oblast, was chosen as a typical rural rayon, and the morbidity rate within it was deemed to reflect that of the entire rural population of the Belorussian SSR. Its total population as of 1 January 1960 was 53,341, of which 43.1% were men and 56.9% were women; 31.8% were children under 15 years of age.

The largest number of applications for medical care was made for children up to one year of age. The rate was found to drop gradually, reaching the lowest point among children 7-9 years old, then to increase gradually past the age of 9. The morbidity rate was found to be higher in women than in men.

Communicable diseases; diseases of the ear, throat, and nose; diseases of the organs of digestion; and injuries were found to be most prevalent, amounting to 53.9% of all diseases treated during 1959.

The medical and health establishments of Tolochinskiy Rayon consist of a 100-bed rayon hospital, an outpatient clinic, seven medical district hospitals, and 16 feldsher-midwife posts. All medical district hospitals are manned by professional medical personnel. The rayon has 6.2 beds available per 1,000 people. About 52% of all applications for treatment were made at feldsher posts during 1959.

109. Estonian SSR Urged to Improve Public Health Service

"All the Best -- for the People," by A. Sarap, head of the Department of Therapeutic and Preventive Medical Service, Ministry of Health Estonian SSR; Tallin, Sovetskaya Estoniya, 18 Oct 62, p 3

This article discusses the tasks of the Estonian SSR to achieve the goals set forth by the All-Union Conference of Medical Workers in its September 1962 meeting in Moscow.

The author notes that Estonia has more than ten hospital beds for every 1,000 people, a ratio somewhat better than that in other republics. The average capacity of city and rayon hospitals has increased significantly. New specialized departments of pediatric surgery and thoracic surgery were created in the Tallin Republic Hospital, and departments of urology, traumatology, and pediatric surgery were created in Tartu. The hospitals have begun to apply the newest diagnostic and therapeutic methods more widely; and the effectiveness of treatment is increasing.

However, the author cautions, the republic health system is still beset with defects. Many hospitals are overloaded and are located in impractical areas (especially in rural localities). Repair and construction work is done much too slowly, he complains; "I know few cases where a hospital was completely ready to begin operation within the allotted time."

He suggests "reserves" which would make it possible to improve health service to the population: first, practice shows that 5-6% of hospital patients could have been successfully treated at home; second, many hospital beds are occupied by the chronically ill, who need only care which can also be provided at home. Taking these "reserves" into account, 12,000-15,000 patients could be treated in the republic, and if all defects could be eliminated, 25,000-30,000, in one year.

On the question of hospital construction, the author recalls the proposal of the Moscow conference that in the future only large hospitals of 600 or more beds be built, which specialized departments of a definite type where it would be possible to create conditions for thorough examination and treatment, corresponding to the contemporary development of medical science.

In 1961, hospitals in the USSR treated more than 40 million people, and in the past year alone 102,000 hospital beds were added.

Looking to the future, the author predicts that new forms of hygienic, comfortable hospital furniture and special apparel for hospital personnel will be developed. The training of nurses will be organized in medical schools at the hospitals. During the Seven-Year Plan, hospitals with a total capacity of 250,000 beds will be built in the Soviet Union.

110. Great Progress Reported in Lithuanian Medical Service

"Soviet Power Has Given This," by Z. Yanushkevichyus,
Corresponding Member of the Academy of Medical Sciences
USSR, Doctor of Medical Sciences, rector of Kaunass
Medical Institute; Vil'nyus, Sovetskaya Litva, 31 Dec 62,
p 2

This article discusses some of the improvements that have taken place in the medical service of the Lithuanian SSR since the Soviets have been in power there.

In 1939 there were only 3.4 physicians for every 10,000 people, but in 1961 there were 16 physicians for every 10,000 people. Medical assistance in rural areas especially has improved. In 1961 there were 14 times as many doctors here per 10,000 as in 1939.

For the first time specialized neurosurgical, urological, cardiological, endocrinological, and dietological medical assistance has been organized. However, when patients need especially complicated treatment, they are usually sent to the best specialized therapeutic establishments of the Soviet Union -- in Moscow, Leningrad, and Odessa.

The 1959 mortality rate of 13.6 per 1,000 inhabitants has been lowered to 8.7 per 1,000. Infant mortality has decreased markedly. Such diseases as exanthematous typhus, diphtheria, trachoma, and syphilis have been practically eradicated.

Discussing Kaunass Medical Institute, the author notes that nearly 80% of the students receive scholarship assistance.

Resuscitation

111. Yugoslavs Discuss Reanimation Work of Armenian Scientists

"News of Great Significance in Medicine," by Prof Dr M. Andrejevic; Belgrade, Borba, 25 Dec 62, p 8

The possibility of restoring life after so-called clinical death, when the work of the heart and lungs stops, has increasingly attracted the attention of scientists, particularly in the Soviet Union. After the heart stops, life in tissues lasts for a short time until the last atom of oxygen is used. With the disappearance of oxygen, life in cells begins to die out, damage to organs begins, and anatomical death occurs. The cells of the brain and heart muscles are particularly sensitive to the lack of oxygen, and these organs quickly become irreparably damaged.

However, the newest research of three Armenian scientists, Professor Serksiyani and Doctors Kanchatriyan and Zakhariyan, who performed their tests on a dog, showed that this clinical death can be prolonged. They first accustomed the dog to living under conditions which prevail at great heights in mountains. They stopped his blood circulation and cut off the activity of his heart and lungs for 12 minutes. After they succeeded in bringing the dog back to life without damaging his vital organs. They consider that this time period of clinical death can be prolonged still more so that in the event of violent death or bleeding in a person certain methods of reanimation can be applied.

Surgery

112. Transplantation of Functioning Organs Predicted for 1963

"Our Pre-New Year Interview; Transplanted Organs Work," by Vladimir Demikhov, director of the Laboratory, Institute of First Aid; Tbilisi, Zarya Vostoka, 31 Dec 62, p 4

In 1961 our laboratory achieved a great victory; the dog Grishka, which is now well known all over the world, has been living with two hearts (its own and another one), for 141 days. Now other dogs with transplanted organs have also been living at the laboratory for a long time.

We are transplanting the heart, the lungs, the kidneys, the adrenals, the extremities, the head, and the lower half of the body, and we are creating cross-circulation between two organisms.

"In addition to animal experimentation, we are continuing our work in 1962 on testing the revival of the heart and lungs of bodies brought in ambulances. In many cases they were revived 1-2 hours after the heart stopped.

"What is the practical significance of this? In some cases when the brain is irreversibly damaged due to cerebral trauma, it is possible to revive the heart and lungs. We propose that it is possible to use them instead of the mechanical heart and lung apparatus which is so extensively used in open-heart surgery at present. To do this, the heart and lungs are placed in a special transparent plastic casing and attached on the outside of the major vessels of the patient's femur. Such an attachment will be useful not only during cardiac surgery, but also during dangerous cardiac weakness when even temporary support to the weakened heart is needed.

"The mechanical heart and lungs can maintain artificial circulation for about 4 hours, while the revived heart and lungs can function for weeks, months, and even years.

"Thus, the temporary attachment of the revived heart and lungs instead of the artificial apparatus will be the first stage in the transplantation of the heart and lungs to man. With careful preparation, this step will be completed successfully in the very near future -- perhaps even in 1963.

"If an organ temporarily and safely attached on the outside functions inadequately, it will be easy and harmless to the patient to exchange it for another sample. Such exchanges can be continued until the best functioning sample for an organ is found.

"Furthermore, we are developing and improving methods to store organs for their subsequent transplantation. (APN)"

113. Organ Transplantation Gives Dog Two Hearts and Three Lungs

"A Daring Experiment"; Moscow, Vechernayaya Moskva,
8 Jan 63, p 1

A dog covered with a sheet lay on an operating table surrounded by physicians and scientists in white overalls. The daring experiment was the simultaneous transplantation to the dog of a second heart and a third lung, performed by the well known physiologist V. P. Demikhov, chief of the Laboratory on the Transplantation of Organs, Scientific Research Institute of First Aid imeni Sklifosovskiy.

"He has been doing research for many years, for the purpose of prolonging life and of saving people from severe diseases.

"Experiments are still proceeding.... The heart, the lungs, the kidneys the adrenals, the head, and the extremities are being successfully transplanted, and attempts are being made to get excellent results of cross-circulation between the organs of the same animal and the organs of a different four-footed animal patient. The life span of the animals is prolonged by such operations. The record number of days was 141 for a dog that lived with two hearts.

"Now, Demikhov's experiments are very complicated, but they end successfully."

A photo identifies V. Demikhov acquainting a scientific colleague from the National Cancer Institute in Washington, Ye. Shirokov, with the experimental work of the laboratory on organ transplantation.

114. Transplantation of Homologous Bone

"Practical Clinical Application of Homoplastic Bone Transplants Conserved by the Chilling Method," by M. Janacek and V. Horn, Acta Chir. Orthop. Traumatol. Cech (Czechoslovakia), 1962, 2, pp 119-128 (from Referativnyy Meditsinskiy Zhurnal, Section 4, No 11, Nov 62, Abstract No 4486, by Ye. M. Morozova

"On the basis of their own clinical data (seven observations) the authors positively evaluated the utilization of homologous bone tissue conserved by the freezing method as suitable transplantation material in many cases in which surgery is necessary, including cases in which large area transplantations are required. It is their opinion that proper treatment and careful selection of homologous bone provides the same results as does autotransplantation."

115. Vascular Isolation in Traumas of Lower Extremities

"Application of the Artificial Circulation Method in Traumatology," by Prof P. A. Kupriyanov, active member of the academy of Medical Sciences USSR, Prof I. L. Krupko, F. B. Balyuzek, Yu. I. Glebov, V. I. Skorik, M. N. Farshatov, and Yu. N. Yur'yev, First Surgical Clinic for the Advanced Training of Physicians and Clinic of Traumatology and Orthopedics, Military Medical Order of Lenin Academy imeni S. M. Kirov; Leningrad, Vestnik Khirurgii, Vol 89, No 8, Aug 62, pp 3-8

Forty-three dogs were used in experiments carried out to determine the conditions necessary for successful surgery on lower extremities with the application of artificial circulation and vascular isolation. The conditions, the mastery of which was sought in the experiments were as follows: (1) the ability to attain an isolated loop of circulation; (2) ability to maintain for a considerable time circulation and tissue metabolism in an isolated extremity; (3) selection of optimal perfusion regimens and their control; and (4) the presence of reflex correlations, particularly when biologically active substances are introduced into the isolated vessels. After determining these conditions, surgery with the application of artificial circulation was performed on six patients suffering from infectious and trophic diseases of the lower extremities. In cases the results were positive. Further investigations with a view toward the possibility of reimplantation of extremities and the restoration of their functions following severe traumas is urged.

116. Tissue Conservation

"New Techniques of Tissue Conservation"; Moscow, Meditsinskiy Rabotnik, 21 Sep 62, p 3

Deep freezing, lyophilization, and preservation in liquid media are the methods used for the conservation of bones, skin, vessels, and other tissues widely utilized in plastic surgery at the Central Institute of Traumatology and Orthopedics. An ampule prepared from fire-resistant glass to be used for the dessication and conservation of tissues in a vacuum has been devised. Containers for the conservation of tissues while in transport has also been devised. Tests are being conducted to determine the possibility of sterilizing tissues by ionizing radiation.

117. Alloplastic Application of Kapron Nets

"Restoration of Defects of the Anterior Abdominal Wall by Alloplastic Methods," by A. Ya. Fishchenko, Chair of the Surgery Faculty, Vinnitsa Medical Institute imeni N. I. Pirogov; Moscow, Khirurgiya, Vol 38, No 11, Nov 62, pp 87-92

Kapron nets were implanted with satisfactory results into a number of patients in the course of restorative surgery on the anterior abdominal wall. The application of kapron nets is therefore indicated when the necessity arises to reinforce weakened aponeurotic fibers, or in cases in which it is not possible to connect the aponeurotic fibers with autoplasmic materials.

Examinations of the abdominal walls 2 years after the implantation of the kapron nets disclosed that the kapron material retained all its chemical properties as well as its mechanical strength.

118. Fraternal Kidney Transplant in Hungary

"The First Hungarian Kidney Transplant on a Human Was Performed in Szeged"; Budapest, Nepszabadsag, 31 Dec, p 12

A 26-year-old mechanic was rushed to the Surgical Clinic, Szeged Medical University, in critical condition. When it became evident that only a kidney transplant could save his life, all members of the family volunteered to give up a kidney although this type of surgery had never before been performed in Hungary. Physicians selected the 21-year-old brother of the patient as the donor and performed the surgery on 21 December. Although 10 days have passed since the operation, the fight to save the patient continues; it will be a long time before he is completely well again.

119. Czechoslovak Transplantation of Joints

"Successes in Orthopedic Surgery"; Bratislava, Svet Vedy, No 11, Nov 62, p 697

Prof Dr M. Jaros and his colleagues at the First Clinic for Orthopedic Surgery of the Faculty of General Medicine of Charles University in Prague have been experimenting since 1958 with the transplantation of human bones and joints. This group has transplanted heads of the femoral joints from young suicides and found that a relatively large portion of such transplants escape immunobiological reactions. The

C-O-N-F-I-D-E-N-T-I-A-L

bone sections were removed from the bodies some 4 hours after death and transplanted the following day. They were preserved in blood plasma containing penicillin at a temperature of 4 degrees centigrade. Examination of the patients after 4 years convinced the orthopedists that transplantation of joints from one person to another is possible even though certain specific problems remain, but these can be solved. This clinic also transplanted an entire foot bone and thus far the result has been satisfactory.

Therapy120. Prophylaxis and Therapy of Shock

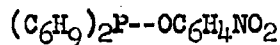
"Two Years of Experience With the Clinical Application of a New Antishock Fluid," by V. G. Mitrofanov, Aktual'n. Vorp. Khirurgii (Urgent Problems of Surgery), Orenburg, 1961, pp 81-87 (from Referativnyy Zhurnal -- Biologiya, No 20, Oct 62, Abstract No 20 767, by V. Glazkova)

"A total of 145 patients aged 41-60 were intravenously by the drop method administered polyvitamin fluid containing 2 milligrams each of B₁, B₂, and B₆; 10 gamma of vitamin B₁₂; 4 milligrams of vitamin PP; 2 milligrams each of folic and pantothenic acids; 4 milligrams of p-aminobenzoic acid; 300 milligrams of ascorbic acid; and 500 milliliters of either 5-percent glucose or physiological solution. In all cases the antishock action of the fluid was noted: cerebral trophism improved, and the excitation-inhibition processes were restored to normal. The author regards the fluid as a necessary preparation for the prophylaxis and therapy of shock."

121. Therapy of Glaucoma With Preparation No 172

"Clinical Observations of the Effect of the p-Nitrophenylic Ester of Dibutylphosphinic Acid (Preparation No 172) on Glaucoma," by V. M. Krasnova, Sb. Khimiya i Primeneniye Fosfoorgan. So'yedeneniy (Collection on the Chemistry and Application of Organophosphorus Compounds), Moscow, Academy of Sciences USSR, 1962, pp 505-507 (from Referativnyy Zhurnal--Biologiya, No 21, Nov 62, Abstract No 21 778)

"Thirty-four patients (42 eyes) suffering from primary glaucoma were treated with preparation No 172



The preparation was administered in the form of a 1:3,000 solution in doses of 3-8 drops a day. A decrease in intraocular pressure was noted in 26 of the patients (31 eyes). Complete compensation of pressure was attained in 18 of the eyes; and a decline to 29-35 millimeters on the mercury column was attained in 13 of the eyes. Visual acuity was increased in 19 of the eyes, especially during the primary stage of the disease. The field of vision was widened in 22 of the eyes. This preparation acts also as an analgesic. Frequent administration of the preparation frequently

removed or alleviated pain in patients suffering from decompensated glaucoma. No side effects as a result of the application of the preparation were noted. When administered to rabbits, it constricted the pupil and reduced intraocular pressure (by 2-3 millimeters). A similar effect was attained when it was used on eyes of healthy people."

122. Cysteine Therapy of Radiation-Induced Cataracts

"Investigation of the Effectiveness of Cysteine When Used in the Therapy of Cataracts Induced by Radiation," by M. Ya. Fradkin, A. Ya. Vilenkina, L. Ya. Itsikson, and Ye. S. Vaynshteyn, Materialy II Vses. Konferentsii Oftal'mologov (Reports From the Second All-Union Conference of Ophthalmologists), 1961, Tbilisi, Republican Scientific Association of Ophthalmologists Georgia SSR, 1961, pp 214-215 (from Referativnyy Zhurnal -- Biologiya, No 20, Oct 62, Abstract No 20 T158, by I. Sluchevskiy)

"Patients suffering from cataracts induced by radiation (20 persons, 32 eyes) were subjected to a course of treatment with cysteine. Some of the patients required a second course of treatment. Improvement was noted in ten of the patients (18 eyes) immediately after the treatment was completed. Visual acuity improved by an average of 0.26 with a maximum of 0.5; it improved to 1.0 in two of the patients (three eyes). Stable improvement was noted in nine of the patients."

123. Alpha-Therapy Alleviates Lumbosacral Radiculitis

"The Treatment of Patients Suffering From Lumbosacral Radiculitis by the Ingestion of Radon Water (General Alpha-Therapy)," by Z. N. Agapova; Moscow, Meditinskaya Radiologiya, Vol 7, No 12, Dec 62, pp 17-21

The author treated 68 patients (24 controls) suffering from lumbosacral radiculitis by means of alpha-therapy whereby radon water (3-5 μ c per day) was ingested for a period of 3 weeks. This method proved to be very effective to the patients suffering from chronic and acute stages of the sickness. The general result of the treatment was improvement in 88.5 percent of the treated patients; 43.1 percent of these showed significant improvement as compared with the control group, 54.1 percent of whom showed improvement (20.8 percent of these showed significant improvement).

Since these patients were subjected to the action of ionizing radiation, the condition of the red and white blood was tested. During the course of treatment and observations afterwards, the patients showed no ill effects from ionizing radiation on the blood. Furthermore, no shifts were seen in the blood sugar or serum bilirubin levels.

124. Hexamethonium and Benzoehexonium in Therapy of Endarteritis Obliterans

"Experimental Therapy of Endarteritis Obliterans With Ganglioblocking Preparations," by P. P. Slabkiy, Kamenets-Podol'skaya Oblast Hospital for Invalids of the Great Patriotic War; Kiev, Klinicheskaya Khirurgiya, Vol 41, No 10, 1962 pp 45-48

Hexamethonium of benzoehexonium was administered subcutaneously in doses of 0.5-1.0 milliliter to 35 patients suffering from endarteritis obliterans in different stages. Considerable improvement was noted in almost all the patients. No side reactions were observed. The ganglioblocking preparations, by blocking the automatic ganglia, prevented the transmission of tonus stimuli normally received from the vasomotor centers; they removed muscular spasms by inducing passive dilation. Only four of the patients failed to respond to therapy by the ganglioblocking preparations.

125. Novocain in Snake Bite Therapy

"Therapy of Snake Bites," by A. T. Berd'yeva; Moscow, Priroda, Vol 51, No 10, Oct 62, p 62

Snake venom has the capacity of increasing the permeability of vessels and tissues and is therefore rapidly absorbed into the blood. Drugs which normalize permeability are therefore effective in the therapy of snake bites. Investigations were conducted on the effectiveness of specific anti-snake serum, sodium amital, and novocain when applied in the therapy of snake bites. Of the three, novocain proved to be the most effective in neutralizing the effects of snake venom. In addition, novocain is inexpensive and readily available. The antsnake serum must be administered with considerable caution because of the possibility of developing serum sickness.

126. Rumanians Use Gerovital To Treat Silicosis

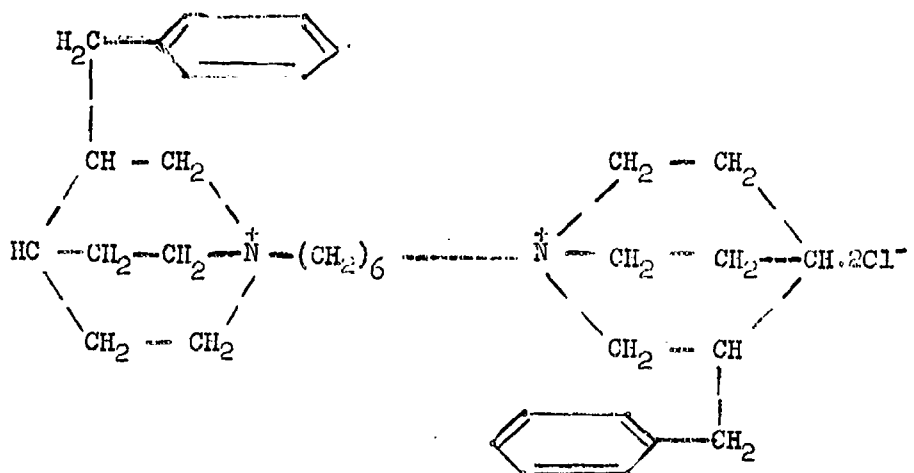
"Gerovital Aerosols in the Treatment of Silicosis"; Bucharest, Munca, 7 Dec 62, p 4

Researchers from the Institute of Geriatrics in Bucharest headed by Dr Ana Aslan, along with medical personnel of the Silicosis Sanitarium in Calimanesti, have tested a method of treating silicosis with gerovital using aerosols. The antitoxin and antiallergy effect and the action on the general nutrition of the organism through the nervous system have been good. Patients returning from treatment at the sanitarium have the treatment continued at regional gerontology centers. Researchers at the Institute of Geriatrics are now conducting studies to apply the method to other toxic diseases.

Toxicology127. Pharmacology of Qualidil [Dichloride of 1,6-di-(3',3'-benzyl-quinuclidine-1',1') hexane]

"The Curarelike Properties of the Dichloride of 1,6-di-(3',3'-Benzylquinuclidine-1',1')-Hexane (Qualidil)," by M. D. Mashkovskiy and F. Satritdinov, Laboratory of Pharmacology, All-Union Scientific Research Chemicopharmaceutical Institute imeni S. Ordzhonikidze; Moscow, Farmakologiya i Tokskologiya, Vol 25, No 6, Nov/Dec 62, pp 685-691

The results of the experiments conducted to determine the pharmacological properties of the dichloride of 1,6-di-(3',3'-benzyl-quinuclidine-1',1')-hexane, also known as qualidil, are reported in the article. Qualidil is a white crystalline powder, readily soluble in water, with a melting point of 100-103 degrees. Its structural formula is as follows:



The experiments, which were carried out on anesthetized and nonanesthetized rabbits, established that qualidil exhibits an active curarelike action, and on the basis of the mechanism of its action, may be grouped with curarelike preparations of concurrent action. The investigations established also that the bisquaternary ammonium compounds of quinuclidine, in which a benzyl radical displaces quinuclidine nuclei in positions three and four and which contain six methyl groups in the connecting chain, are capable of potent curarelike action.

128. Ganglioblocking Properties of Some Quinuclidine Derivatives

"Concerning the Pharmacology of Some of Quinuclidine 2-, 3-mono-, and 2,3-disubstitutes," by I. M. Sharapov, Laboratory of Pharmacology, All-Union Scientific Research Chemcopharmaceutical Institute imeni S. Ordzhonikidze; Moscow, Farmakologiya i Toksikologiya, Vol 25, No 6, Nov/Dec 62, pp 691-698

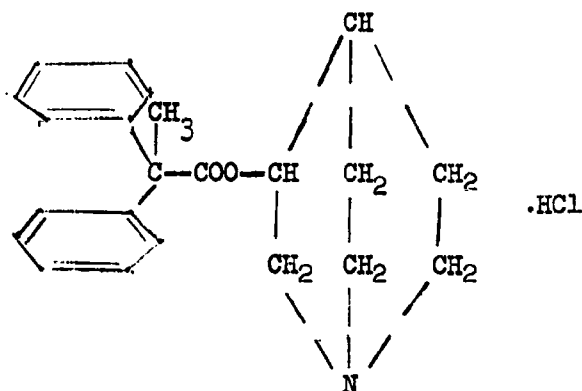
The pharmacological properties of tertiary, quaternary, and bis-quaternary ammonium compounds -- all quinuclidine derivatives -- were studied in experiments conducted on cats under urethan anesthesia. Aqueous solutions of the preparations were injected into the vena femoralis of the animals. It was determined that the 2,3-mono and 2,3-di-substitutes of quinuclidine exhibit an expressed effect on the nicotine-reactive systems of the organism; some of the quinuclidine tertiary compounds exhibit a cholinomimetic action, while others a cholinolytic action and therefore a ganglioblocking effect; the transformation of the tertiary into quaternary and bisquaternary compounds enhances the ganglioblocking properties of the preparations; of the quaternary quinuclidine derivatives, the diiodomethylate of the diethylamino ester of quinuclidine-2-carboxylic acid (dioquin), the diiodomethylate of the dimethylaminoethyl ester of quinuclidine-2-carboxylic acid, and the diiodomethylate of the dimethylamino ester of quinuclidine-3-carboxylic acid have been found to be the more active of the ganglioblocking preparations.

129. Spasmolytic Properties of Aprolidin

"Aprolidin --- A New Cholinolytic Preparation," by M. D. Mashkovskiy and K. A. Zaytsev, Laboratory of Pharmacology, All-Union Scientific Research Chemicopharmaceutical Institute imeni S. Ordzhonikidze; Moscow, Farmakologiya i Toksikologiya, Vol 25, No 6, Nov/Dec 62, pp 679-685

Rabbits, cats, and mice were used in experiments which were carried out in order to determine the pharmacological properties of aprolidin. Aprolidin is the hydrochloride of 3-(alpha, alpha-diphenylpropionyloxy) of quinuclidine. Its structural formula is as follows:

C-O-N-F-I-D-E-N-T-I-A-L



Aprotidol is a white powder, readily soluble in water. Its melting point is 192 - 194 degrees; its molecular weight is 31.7. It was synthesized by M. V. Rubtsov and N. A. Kopylova at the All-Union Scientific Research Chemico-pharmaceutical Institute imeni S. Ordzhonikidze.

The experiments established that aprotidol possesses expressed peripheral and central cholinolytic properties. It is capable of preventing or reducing the effect of acetylcholine, and of removing bronchospasms or intestinal spasms induced by cholinomimetic substances. It is a potent mydriatic preparation. The mydriatic effect of aprotidol is similar to that of atropine. It prevents the spasmodic action of arecoline; in moderate doses it exhibits no antinicotinic action.

130. Effect of Organophosphorus Compounds on Mammals

"On the Problem of the Biochemical Mechanisms of the Effect of Organophosphorus Compounds on Mammals," by D. V. Kirilenko, Tr. 1-y Biokhim. Konferentsii Pribaltiysk. Resp. i Belorussii Posvyashch. 20-letiyu Latv. Lit. Est. Sov. Sots. Resp. (Works of the First Biochemical Conference of the Baltic Republics and Belorussia, Dedicated to the 20th Anniversary of the Latvian, Lithuanian, and Estonian SSRs, 1960, Tartu, 1961, pp 150-155 (from Referativnyy Zhurnal--Biologiya, No 22, Nov 62, Abstract No 22 T45, by V. Shashkov)

"Phosphacol when added to test tubes containing horse serum or tributyrin, molar concentration of $1 \cdot 10^{-9}$ - $1 \cdot 10^{-4}$, fully depressed the activity of nonspecific cholinesterase and alisterase. When added in the same concentrations as above to preparations of hepatic mitochondriae of rats, it had almost no effect on the activity of monoaminoxidase. In order

to depress the activity of alisterase by 50 percent, a concentration of phosphacol ten times greater than that required for the depression of cholinesterase activity is needed. When administered subcutaneously to rats in toxic doses (0.44 milligram per kilogram body weight), it depressed cholinesterase and monoamin-oxidase activity in different parts of the cerebrum."

131. Investigation of Action of Some Tertiary Compounds in the Organism

"Concerning the Transformation of Certain Cholinolytic Substances Containing a Tertiary Amino Group Into Quaternary Ammonium Compounds in the Organism," by S. N. Golikov, S. G. Kuznetsov, and D. V. Ioffe; Moscow, Farmakologiya i Toksikologiya, Vol 25, No 6, Nov/Dec 62, pp 651-656

Rabbits, mice, and cats were used in experiments which established that amino esters which contain an N-chlorobutyl group are transformed into quaternary ammonium compounds upon their entry into the animal organism. This transformation is accompanied by a sharp increase in the peripheral cholinolytic activity of these compounds. It was established also that there is a definite correlation between the rapidity with which the maximal peripheral cholinolytic effect is attained and the rapidity with which the tertiary compounds in vitro are transformed into quaternary compounds. There are indications that the substances containing an N-chlorobutyl group penetrate into the central nervous system.

132. Relationship Between Pharmacological Properties and Chemical Structure of Polyalkylpiperidine Derivatives

"Concerning the Pharmacology of Certain Derivatives of the Polyalkylpiperidine Series," by V. M. Tikhonenko, Chair of Pharmacology, Kiev Medical Institute; Moscow, Farmakologiya i Toksikologiya, Vol 25, No 6, Nov/Dec 62, pp 698-704

Results of the experiments conducted to determine the pharmacological properties of 2,2,6,6-tetramethylpiperidine toluene sulfonate (pirilene), and 1-ethyl 2,2,5,6-tetramethylpiperidine tartrate (EP) are reported in the article. Albino mice, rabbits, and cats were used in the experiments which established that TP, pirilene, and EP exhibit an expressed blocking action on the autonomic ganglia and on the central and cholinoreactive systems; the ganglioblocking action of the above preparations is due to the presence of methyl groups in the second and sixth positions of the piperidine ring and the presence of small alkyl groups in the first position of the hydrogen atom. The replacement of the hydrogen atom in the first position by a benzyl radical reduces the cholinoreactive action

of the preparations. The investigations thus established the relationship between the chemical structure and the pharmacological properties of the compounds. The polyalkylpipridine derivatives are only slightly toxic and are readily absorbed from the gastrointestinal tract.

133. Toxicology of Pentachlorophenol

"Data on the Toxicology and Hygienic Norms of the Mineral Oil Emulsion of Pentachlorophenol -- a New Cotton Desiccant," by L. G. Plakhova and L. I. Platonova, Sb. Nauchn. Tr. Tashek. Med. In-t (Volume of Scientific Works of the Tashkent Medical Institute), 1961, 20, pp 124-128 (from Referativnyy Zhurnal -- Biologiya, No 21, Nov 62, Abstract No 21 T406)

"Experiments carried out on rabbits, rats, and mice which were exposed to intoxication by mineral oil emulsion of pentachlorophenol in concentration of 0.1 milligram per liter in a chamber established that only slight modifications of the blood, urine, and internal organs occurred (mainly in the lungs, kidneys, liver, and central nervous system). The pathologomorphological picture of the internal organs, blood, and urine of animals subjected to intoxication by the emulsion in a concentration of 0.2 milligram per liter in the main corresponded to that in control animals, with the exception of some indexes in individual animals; this made it possible to establish the first concentration as the threshold concentration. A concentration of 0.0004 milligram per liter is recommended as a temporary allowable maximum concentration of the chemical in the air of working areas."

134. Effect of Fluorothan on Other Drugs

"Effect of Fluorothan Anesthesia on the Action of Curarelike, Ganglioblocking, and Adrenomimetic Preparations," by R. A. Al'tshuler, Laboratory of Pharmacology, All-Union Scientific Research Chemicopharmaceutical Institute imeni S. Ordzhonikidze; Moscow, Farmakologiya i Toksikologiya, Vol 25, No 6, Nov/Dec 62, pp 662-667

Fluorothan, 1,1,1-trifluoro-2-chloro-2-bromoethane, synthesized in the Soviet Union, is highly effective when used for inhalation anesthesia. Investigations were conducted to determine the effect of fluorothan on the action of diplacin and ditiline -- muscular relaxants; hexonium and arfonad -- ganglioblocking preparations; and adrenalin, noradrenalin, and mezaton -- adrenomimetic substances. The investigations established that fluorothan anesthesia potentiates the action of diplacin and ditiline; diminishes the lability of the neuromuscular apparatus; inhibits excitation conductivity in the sympathetic ganglia and potentiates the action of other ganglioblocking preparations; and on a background of adrenalin and noradrenalin, disturbs the cardiac rhythm. No such disturbance is noted when fluorothan anesthesia is applied on a background of mezaton.

135. Effect of Some Cholinolytics on the Medulla Oblongata

"Comparative Effect of Cholinolytics Containing Tertiary and Quaternary Nitrogen on the Medulla Oblongata Centers; the Penetration of These Substances Through the Hemato-Encephalic Barrier," by A. Ye. Aleksandrova, Chair of Pharmacology, Leningrad Sanitary-Hygiene Medical Institute and Chair of Pharmacology and Pharmacy, Military Medical Order of Lenin Academy imeni S. M. Kirov; Moscow, *Farmakologiya i Toksikologiya*, Vol 25, No 6, Nov/Dec 62, pp 672-678

The results of the experimental investigations carried out on cats under urethan anesthesia to determine the effect of amizil (benactyzine) and difacil and their quaternary derivatives on the respiratory and vasculomotor centers, and the ability of these substances to penetrate through the hemato-encephalic barrier are reported in the article. The investigations established that: relatively large doses of the iodomethylate and iodoethylate of amizil and the iodoethylate of difacil administered into the vertebral artery had a depressing effect on the respiratory and vasculomotor centers; smaller doses of the tertiary compounds of these preparations were required to attain the same effect; in their effect on an isolated heart of a frog, the quaternary derivatives of amizil and difacil exhibited considerably greater potency than did the original preparations; and the quaternary derivatives of both preparations penetrate through the hemato-encephalic barrier with greater difficulty than the parent substances.

136. Effect of Monochlordimethyl Ester Vapors on the Organism

"Experimental Investigation of the Physiological Effect of one of the Derivatives of the Methyl Ester on the Animal Organism," by Ye. M. Gorbachev, P. A. Balander, V. V. Osipovich, M. G. Polyak, and V. N. Fedyanina, Sb. Dokl. 2-y Nauchn. Konferentsii Fiziologov, Biokhimikov, i Farmakologov Zap.-Sib. Ob'yedin. Posvyashch. 22 S'yezdu KPSS (Volume of Reports on the Second Scientific Conference of Physiologists, Biochemists, and Pharmacologists of the Western Siberian Association Dedicated to the 22d Congress of the CPSU). Tomsk, Tomsk University, 1961, pp 219-220 (from Referativnyy Zhurnal -- *Biologiya*, No 21, Nov 62, Abstract No 21 T394, by Z. Yablonskaya)

"Investigations were conducted of the effect of monochlordimethyl ester vapors on mice, rats, and rabbits. Lethal concentrations of these vapors for mice exposed to the actions of the vapors for a period

of 2 hours were found to be 0.33 to 2.1 milligrams per liter; the LD₅₀ was 1.03 milligrams per liter. Concentrations of 0.02 and 0.03 milligrams per liter induced modifications of the time reflex in the animals; the inhalation of higher concentrations (0.1-0.4 milligram per liter) caused a considerable decrease in the excitability of the central nervous system. Observations of mice intoxicated with monochlordimethyl ester vapors in concentrations of 0.001-0.01 milligram per liter revealed a decrease in the liver content of glycogen (to 50 percent below the control), depressed tissue respiration, and a decline in hepatic phosphorus metabolism.

Repeated intoxications of rabbits with these vapors in concentrations of 0.01 to 0.1 milligram per liter led to a sharp increase in the blood content of glutathione (to 85 \pm 7 milligram percent as against a norm of 55 \pm 12 milligram percent). The increase in the sensitivity of rabbits to adrenalin and insulin indicates that these vapors affect neuro-endocrine regulation. Monochlordimethyl ester vapors are highly toxic."

137. Effect of Dimethyl Formamide on Hepatic Functions

"Concerning the Disturbance of Certain Hepatic Functions Caused by Dimethyl Formamide Intoxication," by N. G. Stepanova, V sb. Toksikol, Novykh Prom. Khim. Veshchestv (Collection on the Toxicology of New Industrial Chemical Substances), No 1, Moscow, Medgiz, 1961, pp 80-84 (from Referativnyy Zhurnal -- Biologiya, No 21, Nov 62, Abstract No 21 T405, by K. Stasenkova)

"Five subcutaneous administrations of dimethyl formamide to rats in doses of 2 grams per kilogram body weight on a background of sodium benzoate (750 milligrams per kilogram body weight) and glyconol (400 milligrams per kilogram body weight) initially sharply increased the urine content of hippuric acid (14 milligrams in a liter of urine against a normal content of 8-9 milligrams per liter) and then considerably decreased it (to 4-5 milligrams per liter of urine). A dose of 4 milligrams per kilogram body weight (five administrations in 10 days) caused a sharp decline in the hippuric acid content (to 3 milligrams in a liter of urine) if the content of the acid was determined immediately after the administration of the dimethyl formamide was halted. Pathomorphological examinations of the liver disclosed diffused necrotic foci in this organ."

IV. VETERINARY MEDICINE

138. New Swine Disease Identified

"An Infectious Disease of Swine Not Known Before," by G. Kh. Musina, Uch. Zap. Kazansk. Vet. In-ta (Scientific Notes of Kazan Veterinary Institute), No 81, 1961, pp 145-149 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 241244, by A. Shapiro)

"Data on a previously unknown, extremely contagious disease of swine observed in the US in three states, including the swine farm at the University of Nebraska, and called NUD (Nebraska University Disease) are presented. NUD is similar to hog cholera and swine erysipelas in its clinical course and pathological-anatomical picture. The pathogen is a filterable virus of the psittacosis-lymphogranulomatosis group, which is cultured in chick embryo yolk sac. It is inactivated in 15 minutes at a temperature of 50° C. Swine of all ages are susceptible; sheep, turkeys, and mice (peroral, intranasal, intramuscular, and intraperitoneal infection) do not contract it. The incubation period is 2-6 days. The disease can proceed subclinically and is activated as a result of antiplague inoculation. Therapy with penicillin, streptomycin, and chlortetracycline has been found effective. In connection with this, the use of antibiotics simultaneously with antiplague inoculations is recommended."

139. Pathology of Foot-and-Mouth Disease

"Pathological Changes in the Organisms of Cattle Which Have Recovered From Foot-and-Mouth Disease," by V. A. Shubin, Tr. Vses. In-ta Eksperim. Veterinari (Works of the All-Union Institute of Experimental Veterinary Medicine), No 25, 1961, pp 103-108 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 241226, by D. Biryukov)

"Residual pathological changes in cattle were observed within one year after convalescence from foot-and-mouth disease. Chronic cellular-infiltrative and sclerotic changes were noted in the recovered animals in different organs and tissues. Different gray-colored, scarred areas of up to 0.2 x 0.6 mm were found in the heart. Small foci of sclerosis, registered only histologically, were observed in the skeletal musculature, more pronounced in the tongue muscles. Especially pronounced changes were observed in the ganglia of the vegetative nervous system. The mammary glands were atrophied. Besides this, foci of atrophic-degenerative processes in the adrenal cortex, and small foci

of induration and thyroid hypofunction were noted. The residual pathology, particularly the stable changes in the vegetative nervous ganglia, the endocrine glands, and the mammary glands, can be explained by diminished productivity of the recovered animals. In connection with this, the author recommends that recovered animals be kept on non-commercial farms."

140. Foot-and-Mouth Disease Studies

"The Pathomorphology of Malignant Foot-and-Mouth Disease of Calves," by V. A. Shubin, Tr. Vses. In-ta Eksperim. Veterinari (Works of the All-Union Institute of Experimental Veterinary Medicine), No 24, 1961, pp 87-92 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 241227)

[No abstract given.]

"Clinical and Electrophonocardiographic Investigation of Cattle Suffering From Foot-and-Mouth Disease," by N. V. Grigor'yev, Uch. Zap. Kazansk. Vet. In-ta (Scientific Notes of the Kazan Veterinary Institute), No 82, 1961, pp 103-110 (From Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 241228)

[No abstract given.]

"The Epizootiology of Foot-and-Mouth Disease in the Azerbaydzhan SSR," by I. I. Manafov and N. A. Baboshina, Tr. Azerb. N.-I. Vet. In-ta (Works of the Azerbaydzhan Scientific-Research Veterinary Institute), No 13, 1962, pp 5-15 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 241229)

[No abstract given.]

141. Encephalitis in Hog Cholera

"The Question of Encephalitides in Hog Cholera," by
 T. P. Kudryavtseva, Tr. Vses. In-ta Eksperim. Veterinarii
 (Works of the All-Union Institute of Experimental Veterinary
 Medicine), No 25, 1961, pp 366-383 (from Referativnyy Zhurnal
 -- Biologiya, No 24, Dec 62, Abstract No 241237, by D.
 Biryukov)

"The central nervous system was examined histologically during hog cholera in 83 suckling pigs, of which 8 died of spontaneous forms and 75 of experimental infection. Pathomorphological changes observed in the central nervous system were of one type, on the whole, and appeared as disseminated, nonpyogenic encephalitis. Cases of encephalitis differed by unique alternative changes and different relationships with proliferative and exudative processes in the brain and spinal cord. The author does not support the viewpoint of American investigators on the strict neurotropism of the hog cholera virus and suggests that the hog cholera virus, as well as the fowl plague virus, can evidently reinforce its pathogenic properties with respect to the central nervous system or, on the contrary, attenuate them under the effect of passages through the animal organism. In the first case, the percent of encephalitis with affections of the nerve cells and conduction pathways is increased; and in the second case, is decreased with preservation of organotropic properties which are present in this virus."

142. Effect of Ultrasound on Microorganisms

"The Mechanism of the Biological Action of Ultrasound Oscillations on Microorganisms in vivo," by K. A. Didebulidze, Tr. N.-I. In-t Mekhaniz. i Elektrifik., Akad. S.-Kh. Nauk GruzSSR (Works of the Scientific-Research Institute of Mechanization and Electrification, Academy of Agricultural Sciences Georgian SSR), No 6, 1960, pp 71-90 (from Referativnyy Zhurnal -- Biologiya, No 24, Dec 62, Abstract No 24B311)

"The author investigated the effect of ultrasound treatment on infected organisms for the purpose of decontaminating them. The effect of ultrasound oscillations on the healthy and infected organism was investigated to determine the maximum dose of action. These experiments made it possible to establish limits of irradiation for the macroorganism. The effect of ultrasound oscillations on microorganisms in vitro and in vivo was also examined to determine the optimum disinfecting dose of action. Ultrasound oscillations have a selective, injurious effect on parasitizing microorganisms in cases where their shape, size, or physical properties differ greatly from the cells of the macroorganism."

143. Czechoslovakia Cautioned on Danger of Foot-and-Mouth Disease

"Caution Against Foot-and-Mouth Disease"; Prague, Nas Chov, No 24, 16 Dec 62, p 756

In view of the extensive incidence of the African strain of foot-and-mouth disease in the European part of Turkey, Bulgaria has taken extensive precautions along the border and has undertaken to restrict traffic across the border. However, the danger of the spread of the disease continues as a result of movement of wild animals.

The symptoms of this strain are the same as those of the foot-and-mouth disease known in Czechoslovakia at present. However, the course of the infection is more severe and losses are greater.

Czechoslovak agricultural enterprises are keeping disinfection mats ready, barns are being locked, and strange persons are not allowed access to barns. The slightest suspicion of foot-and-mouth infection must be reported at once to the local national committee and to the veterinary service. (FOR OFFICIAL USE ONLY) (COPYRIGHT by the State Agricultural Publishing House, 1962)

V. NEWS ITEMS

Conferences

144. Department of Biological Sciences, Academy of Sciences USSR Holds
2-Day Meeting on Cosmic Biology

"Five Triumphant Years"; Moscow, Krasnaya Zvezda, 3 Oct 62,
p 4

A special session of the general meeting of the Department of Biological Sciences, Academy of Sciences USSR, was devoted to the 5th anniversary of launching the first Soviet sputnik. The meetings of the session were held for 2 days in the conference hall of the Institute of Radiation and Physicochemical Biology of the Academy of Sciences USSR.

In his opening remarks Academician N. M. Sisakyan, Secretary of the Department of Biological Sciences, said that the main result of the development of science and technology in recent years was man's penetration into cosmic space and noted that the last decade had seen the formation of a new field of natural science -- cosmic biology.

At the two plenary meetings the assembled scientists heard 11 reports devoted to the development of cosmic physiology and radiobiology, and the microbiological and cytological research that was conducted during the group flight of the cosmonauts A. Nikolayev and P. Popovich. The report of Doctor of Biological Sciences O. G. Gazenko and Doctor of Medical Sciences V. I. Yazdovskiy was devoted to the biological and physiological research during the flights of rockets and artificial earth satellites. Doctor of Biological Sciences A. M. Genin spoke on the principles of developing an artificial environment in the cabins of space ships. Academician A. I. Oparin gave a very interesting report on life in the universe.

Many prominent scientist-biologists participated in the work of the plenary meeting. Among them were Yu. M. Volynkin, V. G. Denisov, I. T. Akulinichev, P. P. Saksonov, A. A. Gyurdzhian, N. A. Agadzhanian, and others.

Twenty-five reports were read at section meetings. Topics included the realization of cosmic flights, the influence of cosmic flights on living organisms, and research in the field of radiobiology.

The session of representatives of cosmic biology united the efforts of the scientists and defined more precisely the program of subsequent activity of biologists in preparing new cosmic victories.

145. Scientific Research Connected With Conquest of Space

"Scientific Session in the Academy of Sciences USSR"; Moscow, Meditinskiy Rabotnik, 5 Oct 62, p 1

This Tass dispatch covers the session of the Department of Biological Sciences, Academy of Sciences USSR, which was held in Moscow, on 1 and 2 October 1962. It is reported that mere listing of reports read at this session is sufficient to show the immense scope of space research conducted in the USSR.

N. M. Sisakyan stated in his report that no matter event in science and technology produced such a profound effect on progress in arts and science as did the successful launching of the first artificial earth satellite. To provide maximum safety for human astronauts was always the principal aim of Soviet scientists and engineers when they were devising methods of rescue and studying the possibility of precise prediction of cosmic radiations.

The report of O. G. Gazenko and V. I. Yazdovskiy contained valuable information about the vital activity of a human organism in outer space. The flights of Andriyan Nikolayev and Pavel Popovich were discussed in some detail. Both astronauts maintained self control even at the countdown, and no symptoms of depression or apprehension were observed in either one of them. Physicians noted that both Nikolayev and Popovich carried out their special physiological and vestibular assignments very well. Each astronaut made one mistake in attempts to solve a number of mathematical problems mentally. Notations in logs aboard space vehicles showed that neither Nikolayev nor Popovich was able to determine the position of his vehicle in space with his eyes closed.

O. G. Gazenko stated that results of physical examination of the astronauts following their re-entry showed no pathological changes in their organism. They showed slight symptoms of fatigue only.

The principles of developing an artificial environment in the cabins of space vehicles, protection against radiation, and special methods of conditioning astronauts were also discussed by scientists at this session.

146. Seminar on Aging in Kiev Announced

"Seminar on Geriatrics"; Moscow, Meditinskiy Rabotnik, 5 Oct 62, p 1

Representatives of all union republics arrived in Kiev to attend a seminar on geriatrics for physicians of therapeutic and preventive medical establishments. The seminar was organized by the Institute of Gerontology and Experimental Pathology, Academy of Medical Sciences USSR.

"The following topics are listed on the program: modern theories of aging, the work of the Institute of Gerontology, the work of hospitals, health groups in stadiums, and exchange of knowledge acquired by gerontological offices. There 50 gerontological offices in the Soviet Union, all of which are located in cities.

"Kiev (our correspondent)"

147. Health Protection of Future Builders of a Communist Society Discussed at the Eighth All-Union Congress of Pediatricians

"Resolution of the Eighth All-Union Congress of Pediatricians";
Moscow, Voprosy Okhrany Materinstva i Detstva, Vol 7, No 12,
Dec 62, pp 82-85

This article reports on the conclusions arrived at by the delegates to the Eighth All-Union Congress of Pediatricians held infants, children, and women is also discussed in this article.

A total of 17,000 gynecological and pediatric consultation outpatient clinics are presently functioning, and 278,000 hospital beds for children are available in the USSR. There are 62,000 pediatricians practicing in the USSR. Training of pediatricians is being conducted at 29 pediatric faculties of the country. Scientific research is being conducted in 17 scientific research institutes of pediatrics and at various chairs of pediatrics, obstetrics, and gynecology of Medical Institutes.

Advanced training and specialization of pediatricians are conducted in 11 institutes for the advanced training of physicians and at 13 pediatric faculties for the advanced training of physicians at medical institutes.

The Eighth All-Union Congress of Pediatricians recommended that hospitals for children be constructed both in urban and in rural areas. These hospitals are to contain outpatient clinics and various departments for specialized medical care of children. It was also decided that therapeutic and preventive medical service be improved further so that the incidence of viral infections and collagen diseases among children will be reduced.

The new epoch in the life of Soviet public school system makes it urgent that the bond between school and life be strengthened. This places upon health agencies and medical science an obligation to intensify their efforts to protect the health of school children. Pediatricians are in a position to help train a new generation of people who are well developed and healthy both physically and mentally.

148. Scientific Session at Institute of Surgery Discusses Burn Treatment

"Moscow, Meditsinskaya Gazeta, 25 Dec 62, p 1

About 50 reports at the recently concluded scientific session at the Institute of Surgery imeni A. V. Vishnevskiy were devoted to the problem of thermal burns. In many of these the expediency of organizing special centers where burn patients would be concentrated was emphasized. This makes it possible to treat them more correctly and with up-to-date methods, and to conduct purposeful research on the application of new immunological and histochemical methods.

M. I. Shrayber generalized the clinical and experimental data on some knotty problems of thermal burns that were obtained in the burn department of the Institute of Surgery imeni A. V. Vishnevskiy. T. Ya. Ar'yev, N. I. Kochetygov, and other workers of the Military Medical Order of Lenin Academy imeni S. M. Kirov evaluated the effectiveness of conservative treatment of burn wounds, the influence of the thermal topography of the skin on plasma loss and hemoconcentration, and the dependence of the gravity of burn shock on the area of deep burns.

N. S. Molchanov and B. L. Gel'man spoke on lung affections -- the most common complication in burn sickness. The reports of workers of the Central Institute of Hematology and Blood Transfusion presented data from research on the noninfectious immunology and therapy of burn sickness, the results of the transfusion of blood, antishock fluids, and blood substitutes during burn shock, and the results of the application of roentgenotherapy in the acute period of the illness.

In the Central Institute of Traumatology and Orthopedics, Ministry of Health USSR, the effectiveness of antibiotics and preserved homoskin in the treatment of burn patients is being studied, and the bio-potentials of wound surfaces are being measured with the goal of judging the therapeutic effect of different actions. These problems were discussed by R. L. Ginzburg, L. A. Povel'nenko, G. M. Belen'kaya, V. V. Yefimov, and others.

Summing up the discussion, A. A. Vishnevskiy emphasized that the immediate task of specialists working in this area of medicine has deepened research into the questions of burn shock, toxemia, and burn shock, toxemia, and burn emaciation.

One of the meetings of the session was devoted to the diagnosis and surgical treatment of tricuspid stenosis. Workers of the Institute of Surgery imeni A. V. Vishnevskiy and the Institute of Cardiovascular Surgery reported on the diagnosis of this defect with the help of simple methods of research, favorable results from the use of a single operation, and the anesthesia used during surgery.

149. Conference on Blood Transfusion in Latvian SSR

"The Most Important Problems of Modern Medicine";, Riga, Sovetskaya Latvija, 11 Sep 62, p 2

"A republican conference on problems of hematology and blood transfusion, in which about 500 medical personnel participated, has been held.

"General attention was attracted by problems of the therapeutic use of blood substitutes--so-called protein hydrolysates--which play an important role in the control of a number of diseases.

"The participants of the conference noted measures for the further development of research and for the improvement of therapeutic methods in the field of hematology and blood transfusion."

150. Rumanian-Bulgarian Symposium on Encephalitis

"Two Symposiums," by Dr M. Mitev; Sofia, Zdraven front, 3 Nov 62, p 2

The second Rumanian-Bulgarian symposium on present day encephalitis, organized by the Rumanian and Bulgarian academies of sciences and the Rumanian and Bulgarian ministries of public health and social welfare, was opened [in Sofia] on 1 November 1962 by Bulgarian Academician G. Uzunov. The symposium was attended by Dr K. Ignatov, First Deputy Minister of Public Health and Social Welfare in Bulgaria, and Bulgarian neurologists, psychiatrists, and neurosurgeons. Guests of the symposium also included Prof Dr P. A. Petritseva, corresponding member of the Academy of Medical Sciences USSR; Prof Dr E. Levkovich, Dr L. M. Ivanova, Dr L. M. Popova from the Soviet Union; Academician Artur Craindler, Prof Dr Oskar Zager, Prof Nicholae Cajal, corresponding member of the Rumanian Academy of Sciences; Prof M. Voiculescu, Prof Enric Fosan, and Docent Mihai Duche from Rumania; Prof Dr B. Horas and Prof Dr Istvan Tariska from Hungary; Dr Irina Zelman from Poland; and Prof Dr Blahoslav Bednar and Dr Vojtech Bajos from Czechoslovakia.

151. Forthcoming Medical Conferences in Czechoslovakia

"Announcements"; Prague, Acta Chirurgiae Orthopaedicae et Traumatologiae Cechoslovaca, Vol 29, No 5, Oct 62, p 401

The Czechoslovak Society for Orthopedics and Traumatology, a section of the Czechoslovak "Jan Ev. Purkyne" Medical Society, will hold a working conference [probably in Brno] on 28-29 March 1963. The conference will be concerned with pathology, therapy, traumatology, and rehabilitation in diseases of the cervical vertebra, followed by free topics. Applications accompanied by a brief summary of the content of planned presentations are to be submitted to the conference secretary, Dr Zdenek Bozdech, Orthopedic Clinic, Brno, Pekarska 53, not later than 1 January 1963.

The 13-14 June 1963 conference of this society [site not indicated] will be concerned with surgery of the coxa, followed by free topics related to this main topic.

The 12-13 September 1963 congress of this society will be held in Bratislava and will deal with tumors. (FOR OFFICIAL USE ONLY. COPYRIGHT by the State Medical Publishing House, Prague, 1962)

152. General Medicine Conference in Czechoslovakia

"Ninth Scientific Conference of the Faculty of General Medicine of Charles University in Prague;" Prague, Sbornik Lekarsky, Vol 65, No 1, Jan 63, p 26

The Ninth Scientific Conference of the Faculty of General Medicine of Charles University in Prague will be held [in Prague] on 24-25 April 1963. The first day will be devoted to clinical diagnosis methods employing isotopes. The customary detailed program will be provided in time for the conference. Invitations to attend the conference may be solicited from the Dean of the Faculty of General Medicine, Charles University, Katerinska 32, Prague 2. (FOR OFFICIAL USE ONLY) (COPYRIGHT by the State Medical Publishing House, Prague, 1963)

153. Czechoslovak Conference of Pediatric Surgeons

"Medical Societies"; Prague, Casopis Lekaru Ceskych, Vol 101, No 51, 21 Dec 62, p 1, 511

The Pediatric Surgery Commission of the Surgery Section of the Czechoslovak "Jan Ev. Purkyne" Medical Society will conduct a 2-day national conference of pediatric surgeons in Brno in June 1963. The first day will be devoted to "Care Concerning an Operation in Pediatric

Surgery." The second day will be devoted to free topics. Applications for active participation in the conference are to be submitted to Dr. E. Frynta, Secretary of the Pediatric Surgery Commission, Pediatric Surgery Clinic, Prague 2, Ke Karlovu 2, by the end of January 1963.

154. Surgical Congress in Czechoslovakia

"Congress of the Surgery Section of the Czechoslovak
'Jan Ev. Purkyne' Medical Society in 1963"; Prague,
Rozhledy v Chirurgii, Vol 41, No 11, Nov 62, p 784

A national congress of the Surgery Section of the Czechoslovak
'Jan Ev. Purkyne' Medical Society on the topic "Prevention in Surgery"
will be held in Brno on 23-25 October 1963. The congress will be
organized according to the following subtopics:

1. General surgery
2. Traumatology
3. Thoracic and abdominal surgery
4. Neurosurgery
5. Cardiovascular surgery
6. Plastic and reconstructive surgery
7. Pediatric surgery
8. Orthopedics
9. Urology

The Oncology Section and the Anesthesiology Section will also
participate actively in the congress.

Applications for presentation of papers at the congress are to
be submitted by 31 December 1962 to Dr Josef Novak, secretary of the
Surgery Section, Surgical Clinic of the Institute for Postgraduate
Medical Training, Prague 8, Bulovka. (FOR OFFICIAL USE ONLY) (COPY-
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155. Czechoslovak Session on Internal Medicine

"Announcements of Meetings"; Prague, Vnitřní Lekarství, Vol 8, No 12, Dec 62, p 1,319-1,320

The "Ninth Internal Medicine Day," devoted to rheumatology and physiatrics, will be held in the Majakovsky hall of the Communications Home, Prague-Vinohrady, Namesti Miru 9, on 15 February 1963, starting at 0800 hours.

The program is as follows:

Morning

1. Some New Findings on Thermal Control and Their Significance for Physiatric and Internal Medicine, (30 minutes), by J. Ipser.

2. Tasks of Physiatrics and Balneology in the Prevention and Treatment of Obesity, (30 minutes), by V. Krizek.

3. Physical Factors of Erythrocyte Sedimentation, (30 minutes), by V. Rauser.

4. Attitude of Physiatric and Internal Medicine Toward the Concept of Rehabilitation, (30 minutes), by K. Prerovsky.

5. Discussion.

Afternoon

6. Our [Czechoslovak] Experience With Long-Term Administration of Cortisones, (30 minutes), by F. Lench, V. Vitulova, and A. Vonkova.

7. Advantages and Disadvantages of Intra-Articular Injections of Cortisone Derivatives, (20 minutes), by F. Lench and R. Hardfeld.

8. Incidence of LE Cells in Progressive Polyarthrits, (20 minutes), by O. Vojtisek.

9. Mental Symptoms in Treatment With Steroids With Particular Attention to Treatment of Lupus Erythematosus Generalisatus, (20 minutes) by F. Lench and C. Dostal.

10. Progressive Polyarthrititis in Youths, (20 minutes), by
S. Havelka and R. Bardfeld.

11. Affliction by Rheumatic Diseases, (20 minutes), by
K. Pavelka and D. Kankova.

12. Discussion.

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House, Prague, 1962)

156. Congress on Vitamins in Czechoslovakia

"Medical Societies"; Prague, Casopis Lekaru Ceskych,
Vol 101, No 50, 14 Dec 62, p 1,488

A congress on "The Significance of Vitamins in Nutrition" will
be held in Prague on 3-5 June 1963 and will have international
participation. The program will be as follows:

First day -- "Introduction to the Significance of Vitamins in
Nutrition. Protection of Vitamins in Technological Processes and in
Food Preparation."

Second day -- A. "Main Deficiencies in Supply of Vitamins and
Their Results. Disorders of Vitamin Metabolism in the Clinic."

B. "Scientific Bases of the Use of Vitamins in
the Prevention and Therapy of Nutritional Disorders and Some Mechanisms
of This Effect."

Third day -- "Problems of Biochemical Determination of Vitamins
in Foods and in Biological Materials" (in the form of group discussion).

Applications for presentation of material and for attendance at
the congress should be address to: Miroslav Bohdal, MD, Institute
of Human Nutrition, Prague-Krc, Budejovicka 800

157. CEMA Plant Protection Group Meets

"The Budapest Meeting of the Plant Protection Working Group Has Come To An End"; Budapest, Nepszabadsag, 11 Dec 62, p 2

The permanent working group for plant protection of the CEMA nations held a meeting in Budapest from 4 - 8 December 1962. The group discussed the international testing of plant protective substances in 1963; this will permit further investigation of the efficacy of the various agents and clarify the needs for worker protection.

The group evolved systems for recording and predicting the spread of pests and diseases, as well as ways of prognosticating the optimum time for taking protective measures.

The group also indicated what procedures must be followed to prevent or stop harmful effects from chemical pesticides.

158. CEMA Conference on Animal Hygiene Research

"Second CEMA Conference on Animal Hygiene Research"; Budapest, Magyar Allatorvosok Lapja, Vol 17, No 11, Nov 62, p 1436

The Second CEMA conference on animal hygiene research was held in Moscow between 25 June and 1 July 1962. Hungary was represented by Dr Janos Meszaros, Dr Jozsef Romvary, and Dr Laszlo Stipkovits.

A total of 17 lectures were heard: of these, 10 dealt with brucellosis, 4 with hog cholera, and 3 with hog influenza. The two Hungarian reports were entitled "Comparative Investigation of Lapinized Hog Cholera Viruses of Various Origin" and "Virus Pneumonia in Hogs."

The attention of participants was called to African swine fever and other infectious diseases which had not yet occurred in the socialist countries.

159. Rumanian Scientific Conference for 1963

"Planned Scientific Meetings of the Union of Medical Science Societies in the Rumanian People's Republic During 1963"; Bucharest, Muncitorul Sanitar, 5 Jan 63, p 3

The Rumanian Union of Medical Science Societies plans the following scientific meetings in 1963:

1. National Congress on Hygiene and Public Health; October 1963, Bucharest; organized by the Society of Hygiene and Public Health; topics to include medical-health aspects of impurities in the air; labor hygiene in the chemical, mining, and metallurgy industries; principles and objectives of food catering; and, mental hygiene of children and adolescents.

2. National Congerence on Dermatology; September, Bucharest; organized by the Society of Dermatovenerology; topics to include correlation of cutaneous pathology with general pathology, and immunology and allergy problems in dermatology.

3. National Conference on Pharmacy; December, Bucharest; organized by the Socceity of Pharmacy; topics to include current problems in the field of medicines, and technology, synthesis, and control of medicines.

4. National Conference on Stomatology; May, Bucharest; organized by the Society of Stomatology; topics to include buccal maxillofacial traumatology, and the lack of front teeth and its treatment.

5. Conference on the Best Methods and Equipment Used in Studying the Nervous System in Connection With Sports Activities and on the Regulation of Respiratory, Circulatory, and Nervous Systems in Competitive Sports; November, Bucharest; organized by the Medical Society of Physical Culture.

6. Conference on the Etiology and Epidemiology of Zoonoses; May, Iasi; organized by the Society of Infection Pathology.

7. Conference on Problems of Obstetrical and Gynecological Care in Rural Areas; June, Craiova; organized by the Society of Obstetrics and Gynecology.

8. Conference on the Role of the Mesenchyma in the Metabolic Processes of Adaptation and Defense; September, Timisoara; organized by the Society of Morphology.

9. Conference on Otorhinolaryngology Emergencies; November, Oradea; organized by the Otorhinolaryngology Society.
10. Conference on the Prevention of Premature Aging; December, Bucharest; organized by the Society of Gerontology.
11. Conference on Intestinal Parasitosis (Discovery, Diagnosis, Prevention, and Treatment), and Conference on Anemia in Nursing Infants; September, Pitesti; organized by the Society of Pediatrics.
12. Conference on Functional Explorations in Mental Illnesses; November, Sibiu; organized by the Society of Psychiatry.
13. Conference on Health Analysis of Military Units; February, Bucharest; organized by the Society of Military Medicine and Pharmacy.
14. Conference on Morbidity From Gastroduodenal Ulcer in a Unit of the Armed Forces; September, Constanta; organized by the Society of Military Medicine and Pharmacy.
15. Symposium on Standardization and Evaluation of Biochemical Methods of Analysis in the Clinical Laboratory; September, Bucharest; organized by the Society of Physiology.
16. Symposium on Cellular Biophysics; April, Iasi; organized by the Society of Physiology.
17. Symposium on the Medical-Surgical Aspects of Sciatic Neuralgia; April, Cluj; organized by the Society of Neurology and Neurosurgery.
18. Symposium on Bone Marrow Transfusion; June, Constanta; organized by the Hematology Section of the Society of Internal Medicine.
19. Symposium on the Sequelae From Stomach Operations; March, Ploiesti; organized by the Society of Gastroenterology.
20. Symposium on the Treatment of Spastic Paralysis and Functional Recovery; May, Tg. Mures; organized by the Society of Orthopedics.
21. Symposium on the Prevention of Blindness in Rumania; July, Bucharest; organized by the Society of Ophthalmology.
22. Symposium on the Hypoglycemic Syndrome; May, Timisoara; organized by the Society of Endocrinology.

23. Symposium on Coronary Diseases; December, Brasov; organized by the Society of Cardiology.

24. Symposium on Balneo-Physiotherapy of Arthrosis and Spondylosis; September, Mangalia; organized by the Society of Balneology.

25. Symposium on Traffic Assidents; April, Brasov; organized by the Forensic Medicine Section of the Society of General Medicine.

26. Symposium on Acute Alcohol Intoxication; April, Brasov; organized by the Forensic Medicine Section of the Society of General Medicine.

27. Symposium on the Clinical Forms of Neurosis in Traffic Safety Personnel; November, Sibiu; organized by the Section of Transportation and Telecommunications Physicians of the Society of General Medicine.

28. Symposium on Adjustment Mechanisms in the Living Organism; October, Bucharest; organized by the Circle on Medical Biology.

29. Symposium on Physicians and Pharmacists of the Past Who Campaigned for the Dissemination of Medical Knowledge Among the People; July, Brasov; organized by the Society of Medical History.

30. Annual Session of the Union of Medical Science Societies; February, Bucharest; organized by the Executive Committee of the Union; problems of medical deontology will be debated.

31. Scientific meeting on problems of encephalography; May, Bucharest; organized by the Electroencephalography Circle.

32. Meeting Commemorating the 100th Anniversary of the Birth of Professor Gh. Marinescu; November, Bucharest; organized by the Society of Neurology and Neurosurgery.

33. Meeting on Problems Concerning Professional Ethics; November in Bucharest and December in Arges regiunes.

34. Meeting on the Techniques of Caring for the Sick; September in Tasi and Cluj regiunes, April in Mures-Autonomous Hungarian Regiune, and June in Banat Regiune.

35. Meeting on the Contributions of Medical Health Personnel in Reducing Infant Mortality; September in Crisana Regiune and October in Bacau and Suceava regiunes.

36. Meeting on Problems Concerning the Activity of Public Health Nurses; June, Brasov Regiune.

37. Meeting on the Activity of Health and Antiepidemic Intermediate Personnel With Regard to Communal and Food Hygiene Problems; December, Ploiesti Regiune.

38. Meeting on the Activity of Intermediate Personnel in Providing Health Assistance to Agricultural Workers; April in Oltenia and Constanta regiunes and May in Galati Regiune.

39. Meeting on the Activity of Intermediate Personnel in Providing Health Assistance in Industrial Enterprises; May in Maramures Regiune and November in Hunedoara Regiune.

40. Joint Meeting on the Surgical Treatment of Bronchopulmonary Suppurations, the Contribution of Thoracic Surgery in Eliminating Cavity Tuberculosis, and Functional Explorations in Surgery; November, Bucharest; organized by the Society of Surgery and the Society of Phthysiology.

41. Meeting on Emergencies in Internal Medicine and Pediatrics at the District Level; June, Pitesti; organized by the Society of General Medicine.

42. Meeting on Individual and Group Hygiene Problems in Rural Areas, Assisting the Chronically Ill in Rural Areas, and Assisting Pregnant Women; May, Bacau; organized by the Society of General Medicine.

43. Meeting on the Pathology and Prevention of Food Poisoning; November, Timisoara; organized by the Society of General Medicine.

44. Meeting on Occupational Pathology and Labor Protection; December, Brasov; organized by the Society of General Medicine.

45. Meeting on Problems in Providing Pediatric Assistance at the Rural Medical District Level; September, Bucharest; organized by the Society of General Medicine.

46. Meeting on Problems of Providing Medical Assistance in Rural Areas; October, Cluj; organized by the Society of General Medicine.

47. Meeting on the Prevention of Acute Digestive Diseases in Rural Areas; May, Oradea; organized by the Society of General Medicine.

C-O-N-F-I-D-E-N-T-I-A-L

48. Meeting on Problems of Providing Preventive Medical Assistance in Coastal Areas; April, Constanta; organized by the Society of General Medicine.

49. Meeting on the Attitude of Field Doctors With Regard to Medical-Surgical Emergencies and Limiting the Use of Antibiotics in the Treatment of Ambulatory Patients; October, Galati; organized by the Society of General Medicine.

50. Meeting on the Prevention and Cure of Silicosis and the Emergency Treatment of Compound Fractures; February, Petroseni; organized by the Society of General Medicine.

51. Meeting on the Problem of Providing Surgical Assistance in Rural Areas; March, Iasi; organized by the Society of General Medicine.

52. Meeting on the Prevention of Rheumatism; September, Baia Mare; organized by the Society of General Medicine.

53. Meeting on the Problem of Providing Medical Health Assistance in Enterprises; June, Tg. Mures; organized by the Society of General Medicine.

54. Meeting on Aspects of Providing Medical Assistance in Rural Areas; April, Craiova; organized by the Society of General Medicine.

55. Meeting on Providing Medical Assistance to Cardiac Patients, Problems Concerning Rheumatic Diseases, and Acute Intoxications in Children; October, Sinaia; organized by the Society of General Medicine.

56. Meeting on the Prevention and Treatment of Acute Poly-articular Pheumatism; November, Suceava; organized by the Society of General Medicine.

160. Yugoslav Neuropsychiatric Congress

"Neuropsychiatric Congress"; Belgrade, Medicinski Glasnik, No 10/12, Oct/Dec 62, p 454

The Second Congress of Yugoslav Neuropsychiatrists will be held in Ohrid in September 1963. The main themes are (1) protection and advancement of mental health (problems of children, adolescents, youth, and the aged); (2) results of traumatic shocks to the nervous system. Two days of the congress will be devoted to independent themes. The address of the congress committee is Neuropsychiatric Clinic, Skoplje.

161. Yugoslav Hematological Meeting

"Hematological Days of 1963;" Zagreb, Lijecknicki vjesnik, No 11, Nov 62, p 1,187

A gathering of hematologists from Croatia and other Yugoslav republics will be held in the Hematological Section Organization of the Convention of Doctors of Croatia in April 1963. Reports will include all branches of practical hematology (morphology, biochemistry, immunology, mechanisms of coagulation and transfusion), and citations of diagnosis, and will consist of actual experiences, achievements, and observations, which will be presented as reviews of clinical, laboratory, and experimental work in the field of hematology in the past several years. The committee invites all doctors who desire to attend Hematological Days to immediately deliver the subjects of their lectures or their suggestions to the following address: Dr M. Hrgovic, Opcia bolnica "Dra O. Novosela," Zajceva 19, Zagreb.

Publications

162. American Publication of Yugoslav Medical Journals

Medicinski Glasnik, Belgrade, No 10-12, Oct/Dec 62, p 454

Beginning in 1962 [sic], the American National Science Foundation (Americka nacionalna naucna fundacija) will begin to publish in English, for the needs of institutions in the US, complete issues of about 15 Yugoslav scientific journals. Among them there will be some medical journals, such as Acta Medica Iugoslavica and Medicinski vjesnik. This venture will contribute toward a better understanding of Yugoslav scientific attainments abroad.

* * *

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Central Intelligence Agency



Washington, D.C. 20505

7 September 2004

Ms. Roberta Schoen
Deputy Director for Operations
Defense Technical Information Center
7725 John J. Kingman Road
Suite 0944
Ft. Belvoir, VA 22060

Dear Ms. Schoen:

In February of this year, DTIC provided the CIA Declassification Center with a referral list of CIA documents held in the DTIC library. This referral was a follow on to the list of National Intelligence Surveys provided earlier in the year.

We have completed a declassification review of the "Non-NIS" referral list and include the results of that review as Enclosure 1. Of the 220 documents identified in our declassification database, only three are classified. These three are in the Release in Part category and may be released to the public once specified portions of the documents are removed. Sanitization instructions for these documents are included with Enclosure 1.

In addition to the documents addressed in Enclosure 1, 14 other documents were unable to be identified. DTIC then provided the CDC with hard copies of these documents in April 2004 for declassification review. The results of this review are provided as Enclosure 2.

We at CIA greatly appreciate your cooperation in this matter. Should you have any questions concerning this letter and for coordination of any further developments, please contact Donald Black of this office at (703) 613-1415.

Sincerely,

A handwritten signature in dark ink, appearing to read "Sergio N. Alcivar".

Sergio N. Alcivar
Chief, CIA Declassification Center,
Declassification Review and Referral
Branch

Enclosures:

1. Declassification Review of CIA Documents at DTIC (with sanitization instructions for 3 documents)
2. Declassification Status of CIA Documents (hard copy) Referred by DTIC (with review processing sheets for each document)

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Processing of OGA-Held CIA Documents

The following CIA documents located at DTIC were reviewed
by CIA and declassification guidance has been provided.

OGA Doc ID	Job Num	Box	Fldr	Doc	Doc ID	Document Title	Pub Date	Pages	Decision	Proc Date
AD0463342	78-03109A	55	1	2	88	Consolidated Translation Survey For April 1965	4/1/1965	190	Approved For Release	3/25/2004
AD0465168	78-03109A	55	1	3	89	Consolidated Translation Survey For May 1965	5/1/1965	245	Approved For Release	3/25/2004
AD0467068	78-03109A	55	1	4	90	Consolidated Translation Survey For June 1965	6/1/1965	221	Approved For Release	3/25/2004
AD0468849	78-03109A	55	1	5	91	Consolidated Translation Survey For July 1965	7/1/1965	218	Approved For Release	3/25/2004
AD0471155	78-03109A	55	1	6	92	Consolidated Translation Survey For August 1965	8/1/1965	236	Approved For Release	3/25/2004
AD0473500	78-03109A	55	1	7	93	Consolidated Translation Survey For September 1965	9/1/1965	221	Approved For Release	3/25/2004
AD0474384	78-03109A	55	1	8	94	Consolidated Translation Survey For October 1965	10/1/1965	181	Approved For Release	3/25/2004
AD0475860	78-03109A	55	1	9	95	Consolidated Translation Survey For November 1965	11/1/1965	305	Approved For Release	3/25/2004
AD0477388	78-03109A	56	1	1	96	Consolidated Translation Survey For December 1965	12/1/1965	181	Approved For Release	3/25/2004
AD0478471	78-03109A	56	1	2	97	Consolidated Translation Survey For January 1966	1/1/1966	198	Approved For Release	3/25/2004
AD0479675	78-03109A	56	1	3	98	Consolidated Translation Survey For February 1966	2/1/1966	354	Approved For Release	3/25/2004
AD0481681	78-03109A	56	1	4	99	Consolidated Translation Survey For March 1966	3/1/1966	237	Approved For Release	3/25/2004
AD0334379	78-03117A	191	1	37	4255	Status And Activities Of Prominent Scientists In Communist China In 1962	1/29/1963	53	Approved For Release	3/29/2004
AD0333974	78-03117A	190	1	35	4212	Scientific Information Report Outer Mongolia (1)	1/17/1963	27	Approved For Release	3/29/2004
AD0335202	78-03117A	195	1	13	4394	Scientific Information Report Outer Mongolia (2)	3/13/1963	27	Approved For Release	3/25/2004
AD0332657	78-03117A	183	1	13	3924	Scientific Information Report Biology And Medicine (22)	10/12/1962	76	Approved For Release	3/29/2004
AD0333147	78-03117A	185	1	30	4020	Scientific Information Report Biology And Medicine (23)	11/16/1962	90	Approved For Release	3/29/2004
AD0333427	78-03117A	188	1	13	4112	Scientific Information Report Biology And Medicine (24)	12/13/1962	84	Approved For Release	3/29/2004
AD0334160	78-03117A	190	1	10	4187	Scientific Information Report Biology And Medicine (25)	1/10/1963	69	Approved For Release	3/29/2004
AD0334612	78-03117A	193	1	10	4310	Scientific Information Report Biology And Medicine (26)	2/20/1963	112	Approved For Release	3/29/2004
AD0335309	78-03117A	195	1	32	4413	Scientific Information Report Biology And Medicine (27)	3/20/1963	110	Approved For Release	3/29/2004
AD0336242	78-03117A	198	1	16	4509	Scientific Information Report Biology And Medicine (28)	4/12/1963	81	Approved For Release	3/29/2004
AD0332575	78-03117A	184	1	6	3957	Scientific Information Report Chemistry And Metallurgy (22)	10/23/1962	47	Approved For Release	3/29/2004
AD0333164	78-03117A	187	1	2	4061	Scientific Information Report Chemistry And Metallurgy (23)	11/28/1962	65	Approved For Release	3/25/2004
AD0333857	78-03117A	189	1	22	4160	Scientific Information Report Chemistry And Metallurgy (24)	1/2/1963	57	Approved For Release	3/29/2004
AD0334310	78-03117A	191	1	20	4238	Scientific Information Report Chemistry And Metallurgy (25)	1/28/1963	52	Approved For Release	3/29/2004